



Little Mindil Beach

25 Gilruth Avenue, The Gardens,
Northern Territory

Engineering Services Report

KTT Investments Pty Ltd

17 JUNE 2021



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EXECUTIVE SUMMARY

ADG Engineers (Aust.) Pty Ltd were engaged by KTT Investment Pty Ltd to prepare an Engineering Services Report as additional information in support of a Development Application for a proposed mixed use development located at 25 Gilruth Avenue, The Gardens, Northern Territory.

The site appears to be adequately serviced by public utilities including reticulated water, sewerage, stormwater drainage, NBN and electrical reticulation. Information discussed in this report is inferred from detailed survey plans in conjunction with DBYD records, PWC online ArcGIS mapping and City of Darwin As Constructed information as well as information gathered via site investigation.

The existing water connection is expected to be adequate to facilitate the estimated demands of the proposed development. There is an existing sewerage pump station. Following consultation with PWC, it is expected that this pump station will have adequate capacity to facilitate connection from the proposed development. Following consultation with PWC, it has been confirmed that a contribution will be required to be paid by the developer to permit connection to the existing pump station. At the time of writing this report the contribution amount had not been disclosed by PWC. Although the existing sewer pump station contains ample capacity to facilitate the development, the existing DN100 associated rising main in Lot 5772 Gilruth Ave contains only 150EP of spare capacity. This main would need to be upgraded to DN225 to facilitate proposed ultimate demand. If the development is staged, PWC can accept 150 EP before upgrade of rising main is required.

An existing overhead 66kV electrical transmission line has been identified to span through the subject site. As part of the proposed development, this overhead reticulation will need to be relocated underground.

All relevant standards and guidelines are addressed in this report including criteria from:

- Power and Water Corporation (PWC) Supplement to the Water Supply Code of Australia
- Power and Water Corporation (PWC) Supplement to the Gravity Sewer Supply Code of Australia
- Northern Territory Planning Scheme
- City of Darwin Subdivision and Development Guidelines (2005)

1 INTRODUCTION

1.1 General

ADG Engineers (Aust.) Pty Ltd was engaged by KTT Investments Pty Ltd to prepare an Engineering Services Report (ESR) as additional information in support of a Development Application for a proposed mixed-use development located at 25 Gilruth Avenue, The Gardens, Northern Territory.

The proposed development will seek approval for development to create a multi-story hotel and luxury villa precinct.

The purpose of this engineering report is to provide advice as to the development proposal as detailed in the Hachem architectural drawings in **Appendix A**. The works described herein are subject to further approvals and cover works required to service the proposed development with regards to earthworks, roadworks, stormwater drainage, sewerage and water supply, electricity, communication and gas.

The required infrastructure will be subject to the conditions attached to the Development Permit.

1.2 Background Information

This report was compiled using information from the following sources:

- 'Dial Before You Dig' (DBYD) As-Constructed information;
- Power and Water Corporation (PWC) online ArcGIS mapping;
- City of Darwin Council (CoD) As-Constructed information;
- City of Darwin Subdivision and Development Guidelines (2005);
- Architectural drawings by Hachem (**Appendix A**);
- Survey Plan prepared by Land Surveys (**Appendix B**); and
- Site visit by ADG.

2 SUBJECT SITE

2.1 Property Details

The total site area is approximately 5.13ha and the existing land titles are provided in **Table 1** below.

Table 1 - Property Detail

Title	Lot 7651, Town of Darwin
Street Address	25 Gilruth Avenue, The Gardens, Northern Territory
Site Area	5.13ha

2.2 Location

The subject site is located at 25 Gilruth Avenue, The Gardens within the City of Darwin local government area and thus will be assessed by City of Darwin Council officers.

Figure 1 displays the locality of the subject site. The site is bound by Gilruth Avenue to the south-east, the Mindil Beach Casino to the north-east, the Timor Sea to the north-west and Burnett Place to the south.

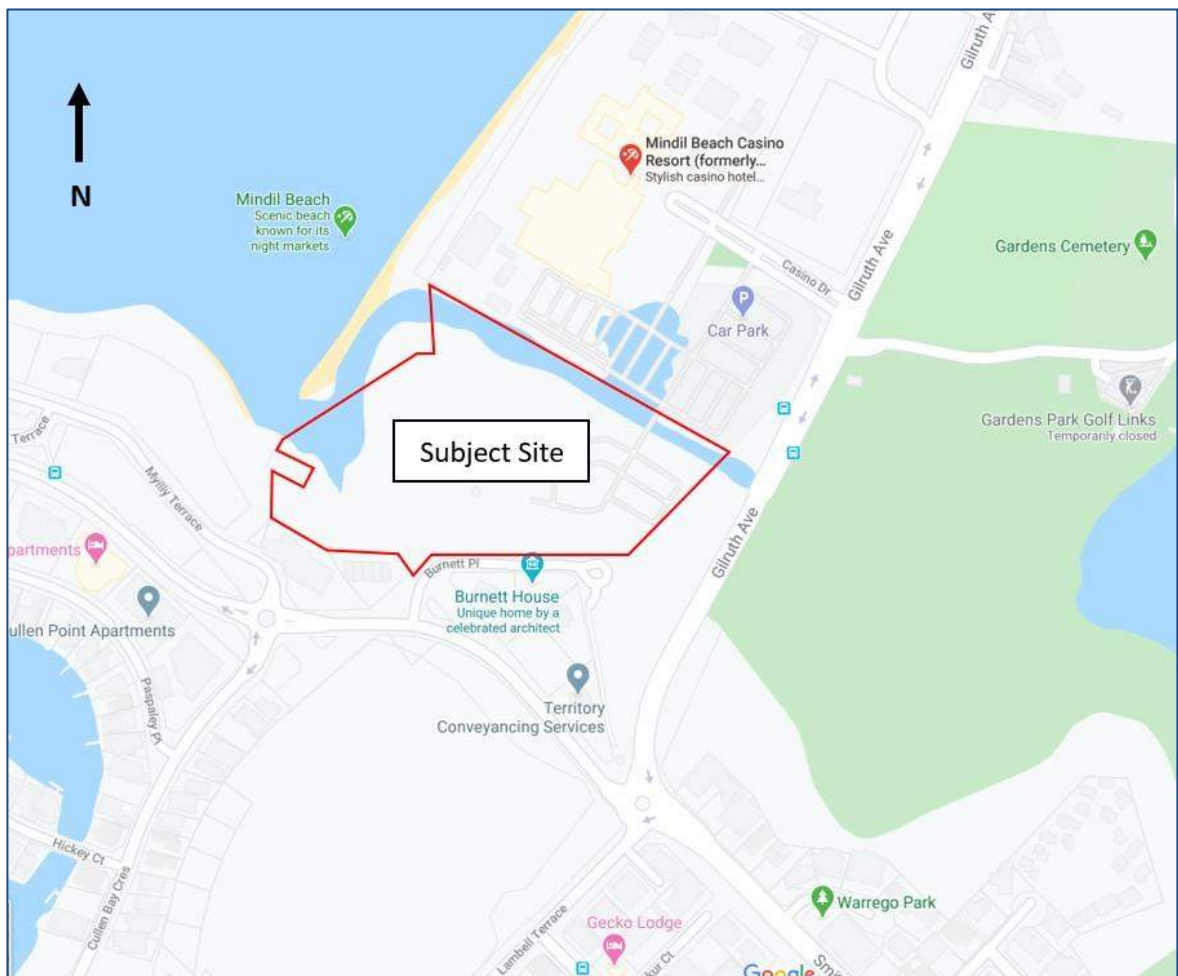


Figure 1 – Locality Map (as accessed from Google Maps 01.04.2020)

3 PROPOSED DEVELOPMENT

The proposed development as described in the Hachem architectural drawings (dated 30/04/2020) is for a multi-story hotel and luxury villa precinct.

A breakdown of the areas for the proposed development is presented in **Table 2**.

Table 1 – Proposed Development Areas

Land Type	Area (m ²)	Percentage of Total Site Area
Roof Area (Impervious)	18,600	36%
Ground Area (Impervious)	4,520	9%
Ground Area (Pervious)	26,140	51%
Lagoon Area (Impervious)	2,040	4%
TOTAL	51,300	100%

Refer to the Architectural drawings prepared by Hachem in **Appendix A** for further information regarding the proposed development.

4 EXISTING SITE FEATURES

4.1 Description

The subject site currently comprises of one (1) freehold allotment which is partly pervious with an existing sealed carpark occupying the eastern half of the lot.

4.2 Dimensions

The total site area is 5.13ha. There is approximately 121m of road frontage to Gilruth Avenue and 190m of road frontage to Burnett Place.

4.3 Topography

The subject site generally falls from south to north at a grade of approximately 1.00%. The site is bound by an existing 1 in 1 rock escarpment bordering the sites southern boundary.

Refer to the survey information prepared by Land Surveys in **Appendix B** for further information.

4.4 Features

As it currently stands, the subject site consists of one (1) freehold allotment which is predominantly pervious with an existing sealed carpark occupying the eastern half of the lot. The carpark accounts for approximately 30% of the site area. An existing footpath and associated footbridges have been identified to the sites northern corner providing pedestrian linkage to the adjacent allotment and beach. A bridge trafficked by vehicular loads has been identified along the sites north-eastern boundary approximately 50m from Gilruth Avenue. This bridge provides linkage to the adjacent allotment and is the current access point to the subject site. **Figure 2** illustrates these existing features.

Refer to **Appendix B** for the detailed survey plan prepared by Land Surveys.

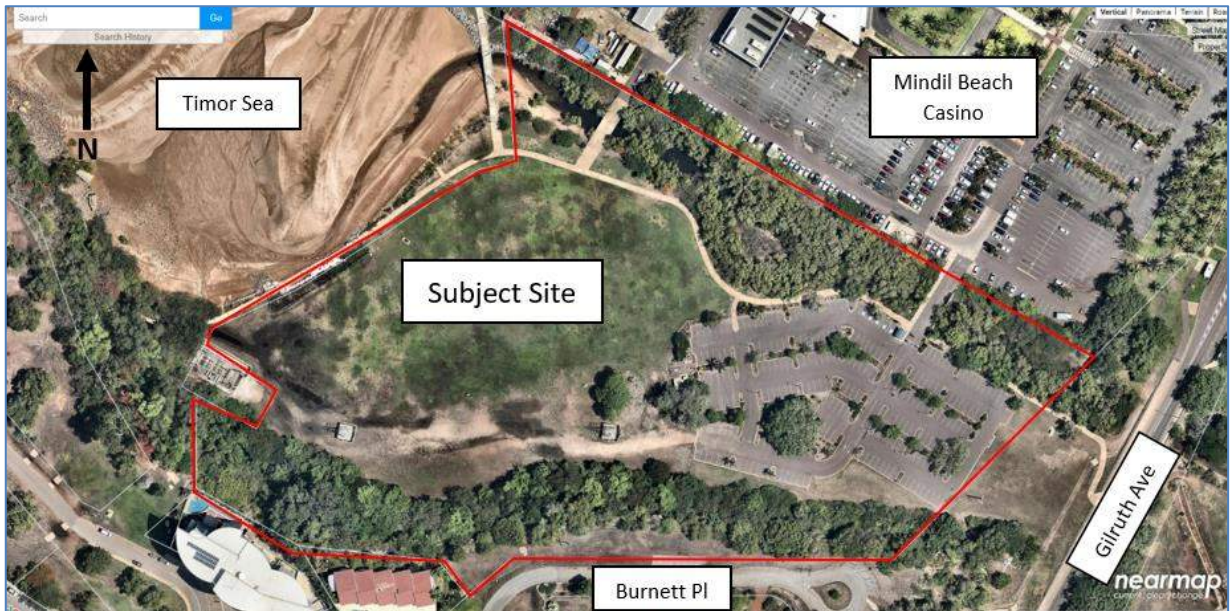


Figure 2 – Existing Site Condition (as accessed from Nearthmap 30.04.2020)

4.5 Vegetation

The site comprises of multiple medium to tall trees scattered across the site with several existing trees spanning the existing escarpment to the site's southern boundary. The remaining ground area not currently occupied by the features defined in **Section 4.4** may be described as good grass coverage with medium permeability.

4.6 Sacred Sites

The site is bound by Mindil Creek along the north-east, a vegetated tidal creek that accommodates a sewerage overflow and stormwater drainage from the Gardens Park Golf Link catchments located east of the site. Along Mindil Creek is Casino Burial Island which, under the Northern Territory Sacred Act 1989, is identified as a sacred site and is a No-Go Area. The sacred side boundary is delineated by the public footpath

4.7 Accessibility

Currently, there are no existing vehicular crossover to the subject site from the adjacent road corridors Gilruth Avenue or Burnett Place. The site is currently accessed through a vehicle access road via the adjacent Mindil Beach Casino carpark entrance on Casino Drive.

The proposed development will gain vehicular access from Gilruth Avenue with pedestrian access from Gilruth Avenue and the neighbouring allotment (Lot 5244).

Refer to the Architectural drawings prepared by Hachem in **Appendix A** for further information regarding the proposed vehicle access.

4.8 Easements

The detailed survey has identified multiple existing easements within the boundaries of the subject site including:

- A 3m sewerage easement adjacent the existing creek along the north eastern boundary;
- A 30m electrical easement central to overhead high voltage infrastructure along the southern site boundary;
- An 8m electrical easement central to overhead power lines along the southern site boundary on top of the escarpment;
- A 3m communication easement spanning from east to west of the subject site;
- A 3m communication easement running from the eastern Gilruth Avenue frontage to the north-west Timor Sea frontage; and
- A 3m "Right Of Way" easement central to the existing sealed carpark accessway to Mindil Beach Casino.

Refer to the detail survey prepared by Land Surveys in **Appendix B** for further information regarding the existing easements associated with the site. Refer also to the Site Constraints mapping prepared by Hachem in **Appendix A**.

4.9 Surrounding Land Use

Under the current Northern Territory Planning scheme, the subject site and the adjacent Mindil Beach Casino allotments (Lots 5772, 5244 and 5751) are currently zoned as Tourist Commercial (TC). Multiple allotments along Burnett Place, south of the subject site, are currently zoned as Heritage (HT) and the Park Garden Golf Links east of the site is currently zoned as Organised Recreation (OR).

Figure 3 provides an extract of the Northern Territory Planning Scheme which confirms the above-mentioned zoning.

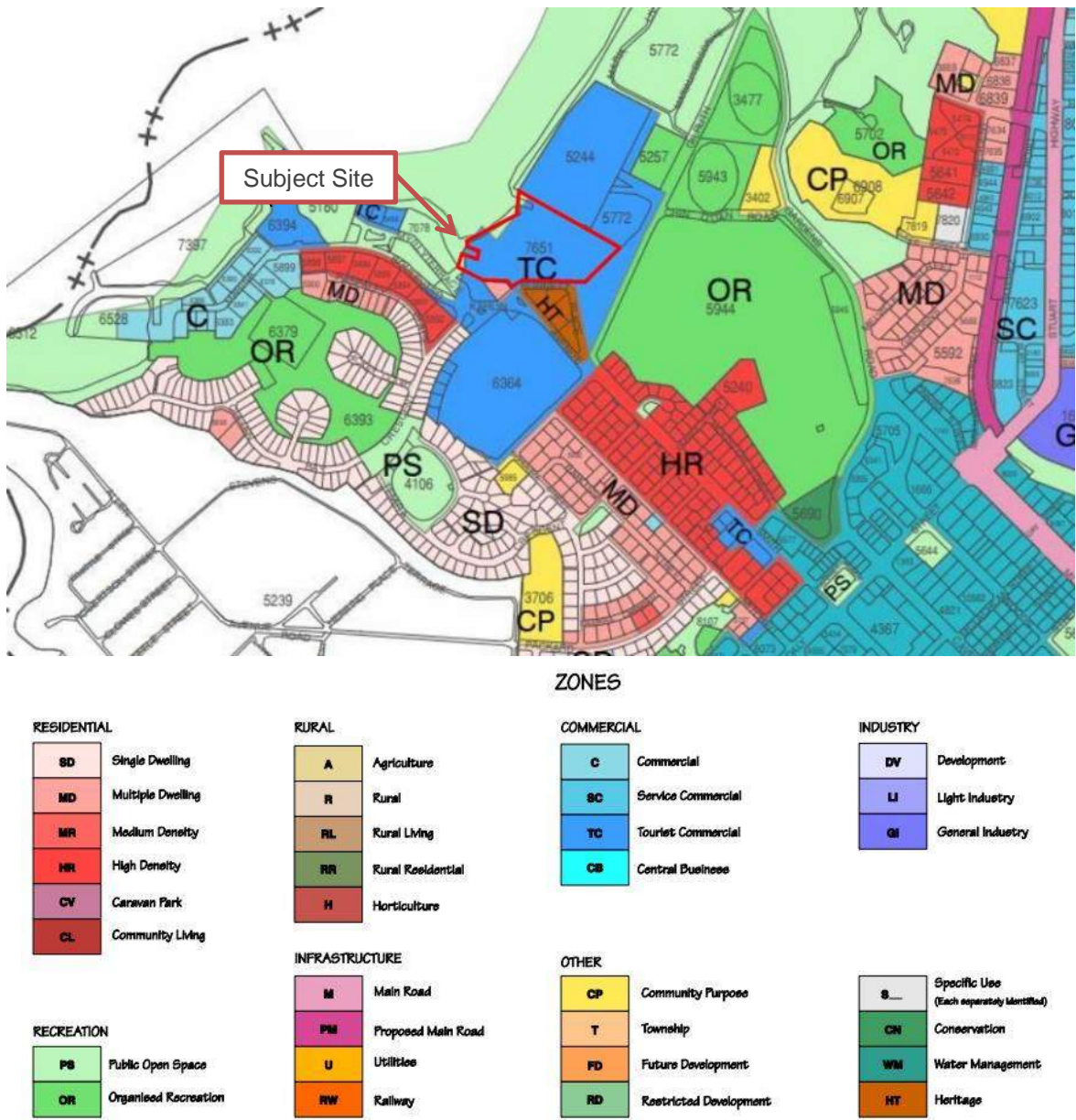


Figure 3 – Northern Territory Planning Scheme dated 5th of March 2019 (as accessed from NT Planning Scheme on 23.04.2020)

5 ACID SULFATE SOILS

Acid Sulfate Soils are soils which contain iron sulphides generally found in low-lying coastal areas below 20m AHD. The detailed survey identifies the natural surface of the site between 3m and 19m AHD, which suggests the site may be subject to an Acid Sulfate Soils risk. A review of the Northern Territory Governments online Natural Resources Maps (NR Maps) Acid Sulfate Soils Risk map overlay has identified the subject site is in an area that possesses a high probability of acid sulfate soil occurrence. Figure 4 provides an extract of the NR Maps Acid Sulfate Soils Risk map overlay.

During construction, mitigation measures will need to be undertaken to eliminate or minimise the hazards associated with acid sulfate soils. It is expected that a Geotechnical Engineer will be engaged prior to the commencement of the construction works to provide an Acid Sulfate Soils Management Plan to assess the likelihood of an acid sulfate soil hazard within the site and provide recommendations on the mitigation measures required to eliminate or reduce the risk.



Figure 4 - Acid Sulfate Soils (as accessed from NR Maps on 23.04.2020)

6 BULK EARTHWORKS

As identified in the Northern Territory Storm Surge Mapping for the Darwin Area, the subject site is currently subject to Storm Surge flood inundation. As per correspondence with NTG DENR Water Resources Division (**Appendix G**). The Primary Storm Surge (PSS) has been confirmed as 5.47m AHD. As such the site will be filled to ensure the habitable floor level of the proposed development is at or above the PSS. To ensure the protection of the habitable spaces of the development, ADG proposed applying a minimum 300mm freeboard to the PSS, meaning the minimum finished floor level of all habitable building areas will be 5.80m AHD. The proposed filling of the site will deliver negligible impact to the water level of the adjacent waterway and in turn will result in a negligible impact to the Storm Surge inundation level.

Shoring may be required adjacent to the site boundaries to facilitate basement construction and services trenching.

7 ROADWORKS

7.1 Existing Infrastructure

The subject site is adjacent to the following roads:

- The development is fronted by Gilruth Avenue to the sites south-eastern boundary; and
- Burnett Place to the sites southern Boundary.

At the sites frontage, Gilruth Avenue is a Council owned and maintained road reserve consisting of two (2) moving lanes. The pavement cross section consists of a two-way crossfall with kerb and gutter drainage on either side. The posted speed limit is 60km/h.

Burnett Place is a Council owned and maintained road reserve consisting of two (2) moving lanes. The pavement cross section consists of a one-way crossfall with flush kerb to the upstream side and mountable gap kerb to the downstream side. A site investigation has confirmed that there is no posted speed limit within Burnett Place, as such the default speed limit of 50km/h as dictated by the Northern Territory Government can be assumed for this road corridor.

Currently, there are no existing vehicle crossovers to the subject site from Gilruth Avenue or Burnett Place. The site is currently accessed through a vehicle access road via the adjacent Mindil Beach Casino carpark entrance on Casino Drive.

7.2 Proposed Infrastructure

A single vehicular access point located along Gilruth Avenue is proposed as part of the proposed development. It is expected that the existing redundant access from the neighbouring allotment will be blocked to vehicular traffic as part of construction. Kerb and gutter damaged during the construction phase will be reinstated to match existing along Gilruth Avenue for the extent of the proposed development.

ADG note the site is also bound by Burnett Place to the southern boundary, however due to the large escarpment dissecting Burnett Place and the developable area of the site, a vehicular access from Burnett Place is not envisioned for the proposed development.

Refer to the architectural drawings in **Appendix A** for further information.

7.3 Traffic Impact Assessment

Refer also to the Traffic Impact Assessment prepared by SJ Traffic for further information in regard to the traffic generation and associated implications relevant to this proposal.

8 STORMWATER INFRASTRUCTURE

8.1 Existing Infrastructure

Based on information gathered via survey, contour data, aerial imagery and site investigations, it has been determined that the majority of the subject site currently discharges via sheet flows towards the north-eastern boundary. Runoff generated within the site is conveyed toward an existing creek located within the site running parallel to the site's northern boundary. Runoff is then ultimately discharged to the adjacent Timor Sea.

A summary below identifies the existing stormwater infrastructure within the vicinity of the subject site:

- ▶ An open-channel natural creek located within the development running parallel to the northern boundary of the site. This drain conveys runoff west to the Timor Sea; and
- ▶ The Timor Sea located to the sites north-western boundary.

The existing Lawful Point of Discharge for the site has been identified as the existing creek running parallel to site's northern boundary.

8.2 Proposed Infrastructure

Stormwater drainage infrastructure will be implemented throughout the site to convey stormwater to the proposed point of discharge. A pit and pipe system will be utilised to convey the minor storm flows to the point of discharge. Runoff from a major rainfall event (1 in 100 year) will be conveyed as overland flow through the centralised driveway (ensuring a depth velocity multiplier of less than 0.40) to the point of discharge.

The above proposal is subject to further approvals from City of Darwin Council, NTG Department of Infrastructure, Planning and Logistics and Department of Environment and Natural Resources (DENR).

It is proposed to discharge flows to the creek via a headwall outlet. The proposed outlet will need to consider tidal influence and the affected pipework will need to be saltwater cover class or a material not susceptible to saltwater corrosion (ie Poly Propylene). The proposed outlet should consider the installation of a non-return valve to regulate tidal influence to the internal hydraulic network.

Refer to Stormwater Management Plan (SMP) '23085_C_R001_Rev01' prepared by ADG Engineers (Aust.) Pty Ltd for further detail.

9 SEWERAGE & WATER DEMAND

The number of equivalent persons (EP) was used to calculate the demand rates of the proposed water and sewerage reticulations. For the development, the EP was calculated by applying a demand rate per bedroom and commercial area as outlined in the PWC Supplement to the Water Supply Code of Australia. Calculations are based on the proposed development as detailed by Hachem Architects plans revision P6 dated 19/05/2020 (**Appendix A**).

Table 2 provides a summary of the EP calculations.

Table 2 - Proposed Water and Sewer Demand

Property Type	Units	Development Area	Criteria	EP
Hotel	149 Units 90 Employees	N/A	0.05 EP / Visitor (Assume 2 persons per room) 0.5 EP / Employee (assume Employees equal 30% of Visitors)	59.90
Villas (2 and 3 Bedroom)	26	N/A	2 EP / Dwelling Unit	52.00
Residential Apartments (2, 3 & 4 Bedroom)	46	N/A	2 EP / Dwelling Unit	92.00
Function / Commercial Space	N/A	0.25 ha	35 EP/ha	8.75
Retail / Stalls	N/A	0.03 ha	20 EP/ha	0.60
Total EP				213.25

10 WATER SUPPLY

10.1 Existing Infrastructure

A review of PWC’s online ArcGIS mapping has identified the following water infrastructure within connectible proximity to the subject site:

- ▶ A 225mm AC main located in Gilruth Avenue adjacent to the eastern boundary of the subject site; and
- ▶ A 150mm PVC branch main with service connection in Gilruth Avenue adjacent to the eastern boundary of the subject site.

Refer to the ArcGIS information in **Appendix C** for further information regarding the existing water infrastructure.

10.2 Flow Estimation

Section 2.2 of the PWC Supplement to the Water Supply Code of Australia specifies the following water demand criteria for a residential and commercial developments.

Table 3 – Water Loading Criteria

Demand	Potable Water Supply
Average Daily (AD)	300 L/EP/Day
Peak Day (PD)	1100 L/EP/Day
Peak Hour (PH)	1.9 x AD (Darwin Area)

In accordance with the PWC Supplement, the expected water loading from the proposed development is provided in **Table 4**.

Table 4 - Expected Water Loading

Development Type	EP	AD (L/s)	PD (L/s)	PH (L/s)
Hotel	59.90	0.208	0.763	0.395
Villas (2 and 3 Bedroom)	52.00	0.181	0.662	0.343
Residential Apartments	92.00	0.319	1.171	0.607
Function / Commercial	8.75	0.030	0.111	0.058
Retail / Stalls	0.60	0.002	0.008	0.004
Total	213.25	0.389	1.425	0.738

10.3 Point Of Connection

ADG Engineers anticipate that the proposed development will utilise to the existing 150mm PVC branch and service connection at Gilruth Avenue. PWC have advised that, additional sluice valves may be required either side of the connection tee to ensure security of service. Details of the proposed connection will be provided during the detailed design stage. The proposed connection will be subject to approval by PWC.

For more information on the proposed connection, refer to the Preliminary Civil Services Layout Plan in **Appendix D**. Refer also to the PWC meeting minutes in **Appendix F** for further information on the proposed point of connection.

11 SEWERAGE RETICULATION

11.1 Existing Infrastructure

A review of PWC’s online ArcGIS mapping has identified the following sewerage infrastructure within connectible proximity to the subject site:

- ▶ A Sewer Pump Station (SPS) located on Lot 5751 adjacent to the subject site with 330EP allocated capacity. Although this SPS currently retains adequate capacity to facilitate the proposed development, PWC has confirmed that the associated DN100 rising main in Lot 5772 would be adequate to accept an additional 150EP before an upgrade to the rising main would be required; and
- ▶ A 150mm PVC main located beneath Mindil Beach Casino Carpark north of the development.

Refer to the ArcGIS information in **Appendix C** for further information regarding the existing sewerage infrastructure.

11.2 Flow Estimation

Section 3.2 of the Power and Water Corporations Northern Territory Supplement to the Sewerage Code of Australia specifies the following sewage loading criteria as per **Table 5**

Table 5 - Sewage Loading Criteria

Demand	Potable Water Supply
Average Dry Weather Flow (ADWF)	180L/EP/Day
Peak Dry Weather Flow (PDWF)	$r * \text{ADWF}$
Peak Wet Weather Flow (PWWF)	$D * r * \text{ADWF}$
Diurnal Peak Factor (r)	$r = \left(1.74 + \frac{330}{EP^{0.55}}\right)^{0.5}$

In accordance with the PWC Supplement to the Gravity Sewer Supply Code of Australia, the expected site loading for the proposed development is presented in **Table 6**.

Table 6 - Expected Sewage Loading

Development Type	<i>r</i>	EP	ADWF (L/s)	PDWF (L/s)	PWWF (L/s)
Hotel	4.538	59.90	0.125	0.567	1.701
Villas (2 and 3 Bedroom)	4.538	52.00	0.108	0.492	1.476
Residential Apartments	4.538	92.00	0.192	0.871	2.612
Function / Commercial	4.538	8.75	0.018	0.083	0.248
Retail / Stalls	4.538	0.60	0.001	0.006	0.017
Total	4.538	213.25	0.444	2.018	6.054

11.3 Point Of Connection

ADG Engineers anticipate that the proposed development will be connected to the existing SPS adjacent the subject site. In conversations with PWC, it has been confirmed that a contribution will be required to be paid by the developer to permit connection to the existing pump station. At the time of writing this report the contribution amount had not been disclosed by PWC. Details of the proposed connections will be provided during the detailed design stage. As identified in correspondence with PWC dated 25 June 2020, the existing DN100 associated rising main in Lot 5772 Gilruth Ave contains 150EP of spare capacity. To facilitate the proposed development, this main would need to be upgraded to DN225 to facilitate proposed ultimate demand. If the development is staged, PWC can accept 150 EP before upgrade of rising main is required. The proposed connection and extent of upgrade to the sewer rising main will be subject to approval and negotiation with PWC.

For more information on the proposed connection, refer to the Preliminary Civil Services Layout Plan in **Appendix D**. Refer also to the PWC meeting minutes in **Appendix F** for further information on the proposed point of connection.

12 ELECTRICAL SUPPLY

12.1 Existing Infrastructure

A review of PWC's online ArcGIS mapping has identified the following electrical infrastructure within connectible proximity to the subject site:

- ▶ Underground electrical cables (less than 33kV) underneath the existing carpark continuing to Gilruth Avenue adjacent to the subject site;
- ▶ An active electrical distribution substation central to the site connected via the above-mentioned electrical cables;
- ▶ An overhead high voltage (11kV) transmission conductors spanning along the southern site boundary;
- ▶ An overhead high voltage (66kV) transmission conductor spanning from east to west of the subject site and associated cable termination yard in the western corner of the site;
- ▶ Underground transmission cables (66V) running from the cable termination yard to Mandora beneath the Timor Sea.

Refer to the ArcGIS information in **Appendix C** for further information regarding the existing electrical infrastructure.

12.2 Proposed Infrastructure

Preliminary electrical plans for the development have been developed by Ashburner Francis. As identified in **Section 12.1**, there is a significant amount of existing electrical infrastructure within the site. To facilitate the proposed development, a large portion of the existing overhead infrastructure will need to be relocated underground. The works detailed on the Ashburner Francis preliminary drawings are subject to further detailed design and approvals from relevant authorities.

Refer to **Appendix E** for further details on the proposed electrical infrastructure.

13 COMMUNICATIONS

A review of the DBYD information has identified the following communication infrastructure within connectible proximity to the subject site:

- Underground conduit owned by Nextgen on the eastern side of Gilruth Avenue;
- Underground NBN cabling on the eastern side of Gilruth Avenue;
- Underground Telstra cabling from Gilruth Avenue to Mandora beneath the Timor Sea;
- Underground Telstra cabling running along the southern site boundary

It is proposed that the telecommunications consultant will negotiate with the relevant carriers regarding the requirements of the proposed development telecommunications connection and the extent of any upgrading and possible relocation works to the system if necessary.

Refer to the DYBD Information in **Appendix C** for further details on the existing communications infrastructure.

14 GAS

The DBYD search has identified that there is no existing gas infrastructure within connectable proximity to the subject site.

15 CONCLUSION

The site appears to be adequately serviced by public utilities including reticulated water, sewerage, stormwater drainage, NBN and electrical reticulation. Information discussed in this report is inferred from detailed survey plans in conjunction with DBYD records, PWC online ArcGIS mapping and City of Darwin As Constructed information as well as information gathered via site investigation.

The existing water connection is expected to be adequate to facilitate the estimated demands of the proposed development. There is an existing sewerage pump station. Following consultation with PWC, it is expected that this pump station will have adequate capacity to facilitate connection from the proposed development. In conversations with PWC, it has been confirmed that a contribution will be required to be paid by the developer to permit connection to the existing pump station. At the time of writing this report the contribution amount had not been disclosed by PWC. Although the existing sewer pump station contains ample capacity to facilitate the development, the existing DN100 associated rising main in Lot 5772 Gilruth Ave contains only 150EP of spare capacity. This main would need to be upgraded to DN225 to facilitate proposed ultimate demand. If the development is staged, PWC can accept 150 EP before upgrade of rising main is required.

An existing overhead 66kV electrical transmission line has been identified to span through the subject site. As part of the proposed development, this overhead reticulation will need to be relocated underground

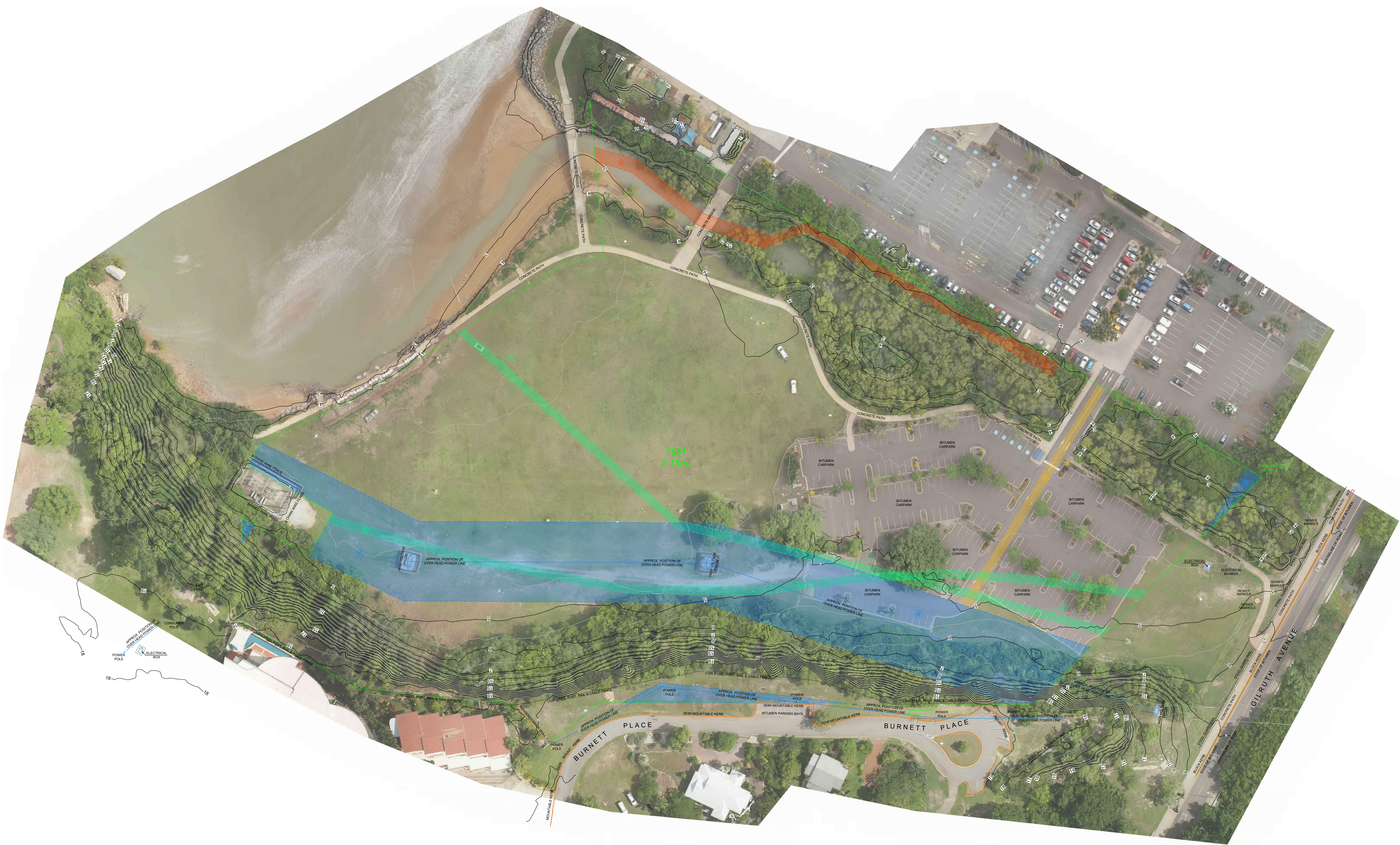
Detailed engineering diagrams and management requirements for the proposed development are to be submitted to the relevant authority for approval prior to any works commencing on site with design certification prepared by a qualified engineer or scientist.

Appendix A Architectural Plans

(Refer to Appendix 1B of the NT EPA Referral)

Appendix B Site Survey Plan

SERVICE LEGEND	
SEWERAGE	
COMBO PIT	[Symbol]
GRATE	[Symbol]
SIDE ENTRY PIT	[Symbol]
STORM WATER MANHOLE	[Symbol]
ELECTRICITY	
CABLE MANHOLE	[Symbol]
CABLE PIT / BOX	[Symbol]
CONSUMER POLE	[Symbol]
LIGHT POLE	[Symbol]
POWER POLE	[Symbol]
STAY POLE	[Symbol]
STAY WIRE ANCHOR	[Symbol]
OM POWER LINE	[Symbol]
GAS	
GAS MANHOLE	[Symbol]
GAS MARKER	[Symbol]
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GAS VALVE	[Symbol]
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SEWER LINE	[Symbol]
TELECOMMUNICATION	
TEL COMMS MANHOLE	[Symbol]
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TEL COMMS PIT	[Symbol]
WATER	
FLUSH POINT	[Symbol]
HYDRANT	[Symbol]
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WATER LINE	[Symbol]
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PEG FOUND	[Symbol]
OTHER	
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AVAILABLE	CONFIRMED
SERVICE	
WATER	[Symbol]
SEWERAGE	[Symbol]
GAS	[Symbol]
TEL COMM	[Symbol]
POWER	[Symbol]
SERVICES MARKED WITH THIS SYMBOL ARE AVAILABLE ON SITE	



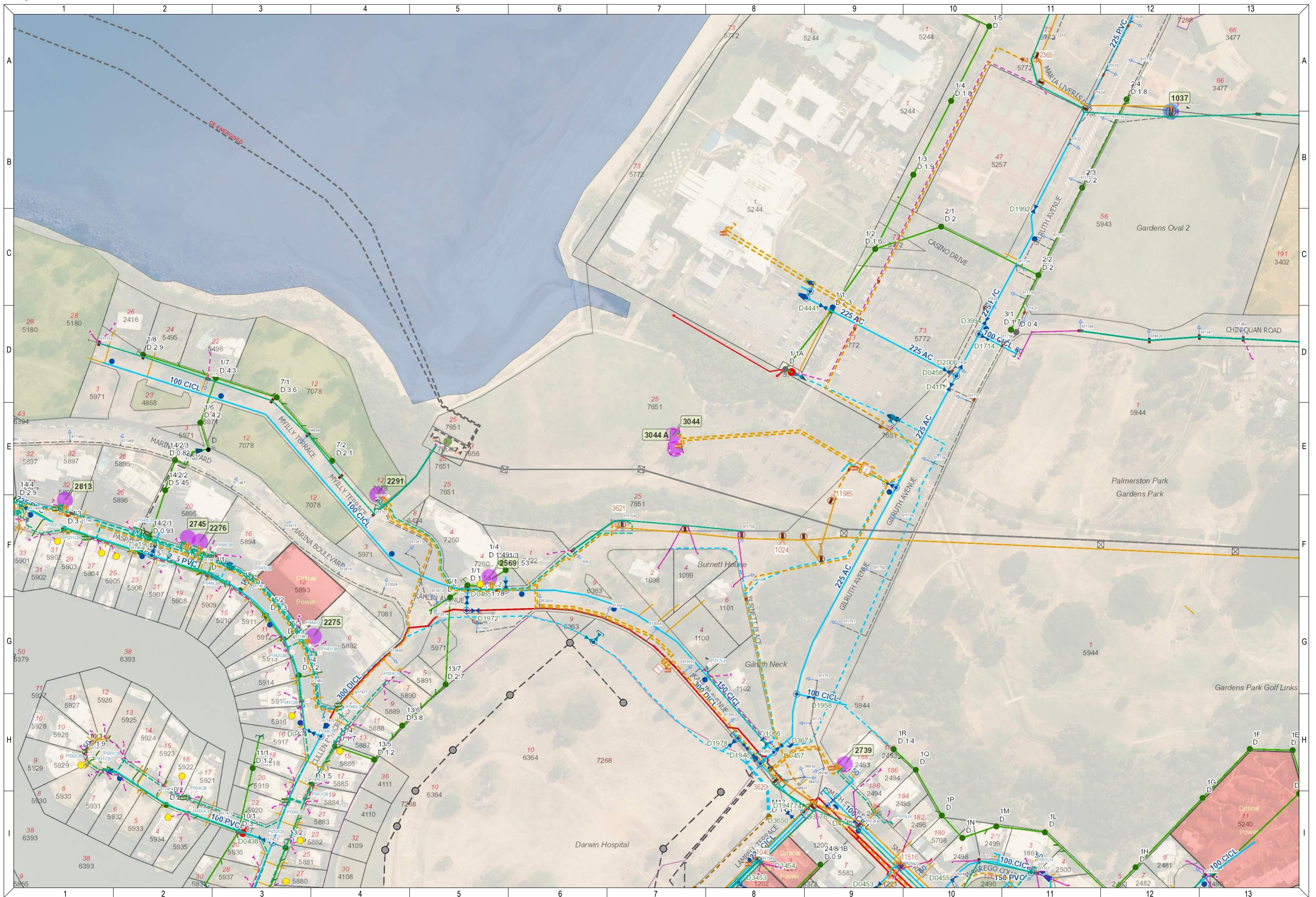
BOUNDARY INFORMATION SOURCED FROM THE NORTHERN TERRITORY ATLAS & SPATIAL DATA DIRECTORY. BOUNDARY LINE WORK HAS BEEN CONVERTED TO MGA4 BASED ON CRM 995220043, WITH A SCALE FACTOR OF 1.00008948 AND A GRID CONVERGENCE OF 0'23'40.83". BEARINGS & DISTANCES SHOWN ARE FROM SURVEY PLAN S2009/255A

(A) = EASEMENT (SEWERAGE) BENEFIT TO THE POWER & WATER CORPORATION.	CONTOUR LEGEND - 0.5m INTERVALS MAJOR CONTOURS 00 MINOR CONTOURS
(B) = EASEMENT (ELECTRICITY SUPPLY) BENEFIT TO THE POWER & WATER CORPORATION.	NOTE: THIS PLAN HAS BEEN PREPARED WITH 20 VALUES AND HAS MGA4 ZONE 52 COORDINATES.
(C) = EASEMENT (ELECTRONIC COMMUNICATIONS SUPPLY) BENEFIT TO TELSTRA CORPORATION LTD.	NOTE: AHD LEVEL DERIVED FROM COORDINATED REFERENCE MARK 995220043 - RL = 19.267
(D) = EASEMENT (RIGHT OF WAY) BENEFIT TO THE POWER & WATER CORPORATION.	SURVEY CONTROL COORDINATE LISTING MGA94 ZONE 52 NAME EASTING NORTHING ELEVATION CRM 995220043 866006.915 8622941.968 19.267

LOT : 7651 (# 25) GILRUTH AVENUE	SURVEY PLAN : S2009/255A	CLIENT : KTT INVESTMENTS PTY. LTD.
SUBURB : THE GARDENS	C/T : 832 / 126	SURVEYED ON : 14/02/2020
AUTHORITY : CITY OF DARWIN		SURVEYOR : LV / BZ
BUILDERS / CLIENTS: SITE SURVEY ONLY. THE INFORMATION SHOWN ON THIS PLAN IS SHOWN AT THE TIME OF SURVEY. VERIFY BOUNDARY INFORMATION, AND ANY OTHER INFORMATION, BEFORE COMMENCING CONSTRUCTION. CONSULT THE CITY OF DARWIN FOR ANY CHANGES TO THIS PLAN. CONSULT THE CITY OF DARWIN FOR ANY CHANGES TO THIS PLAN.		DRAFTER : MR
SCALE : 1:500	JOB No: 2000201 - PLAN: FS - 001 - A 1 OF 1	



Appendix C
DBYD / ArcGIS / As-Constructed Data





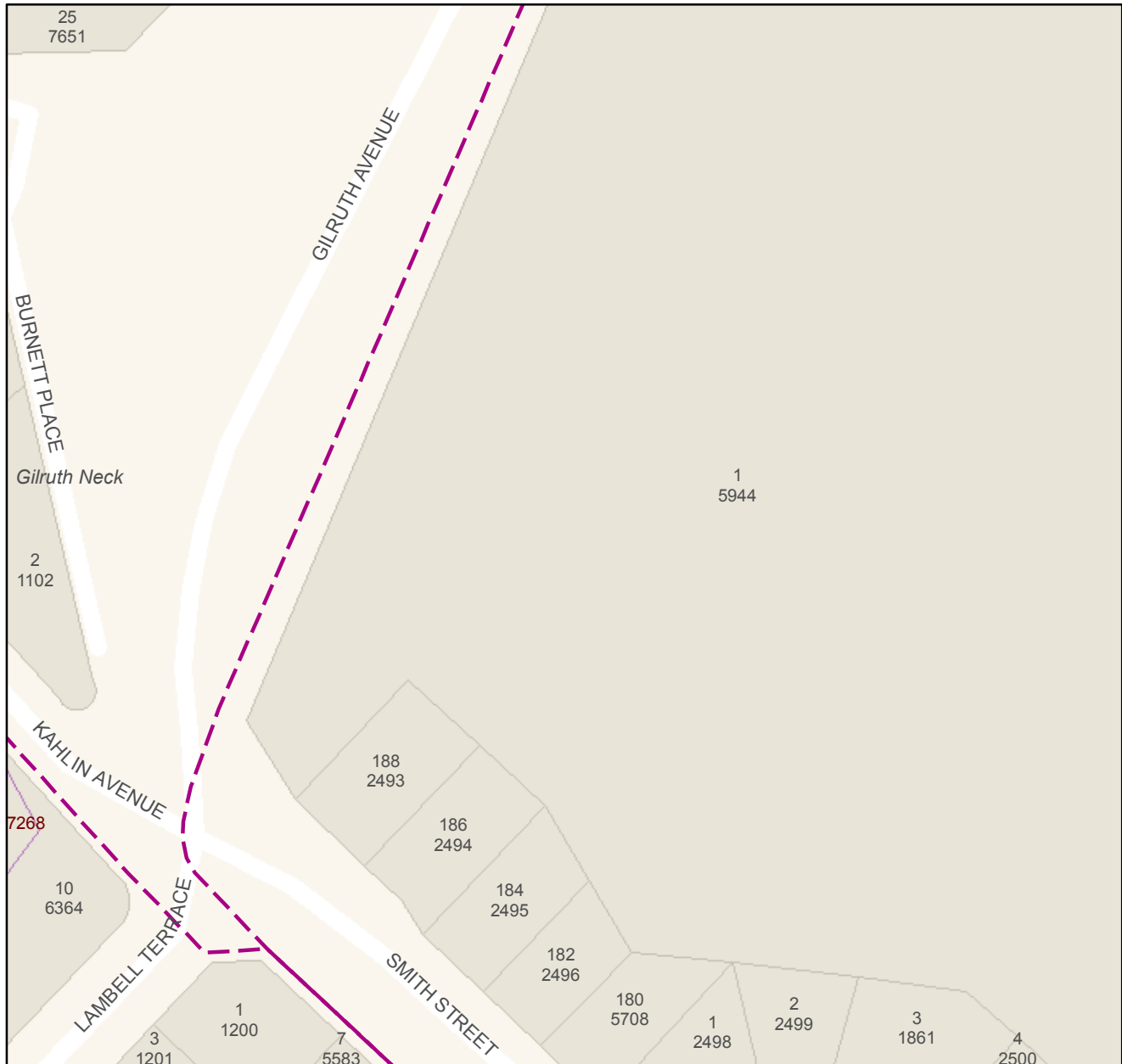
DBYD Infrastructure Location Advice

- **Activities within 3 metres of Power and Water Corporation assets require written approval (AWV or Similar) prior to commencing work.**
- Do not assume depth or alignment of assets. Locations provided are approximate.
- You must read and understand all information supplied before undertaking any works.
- All information provided to you is valid for 30 days from the date of issue

LOCATION PLAN - Comms



Not to scale



Date of Issue: Wednesday, 18 March 2020

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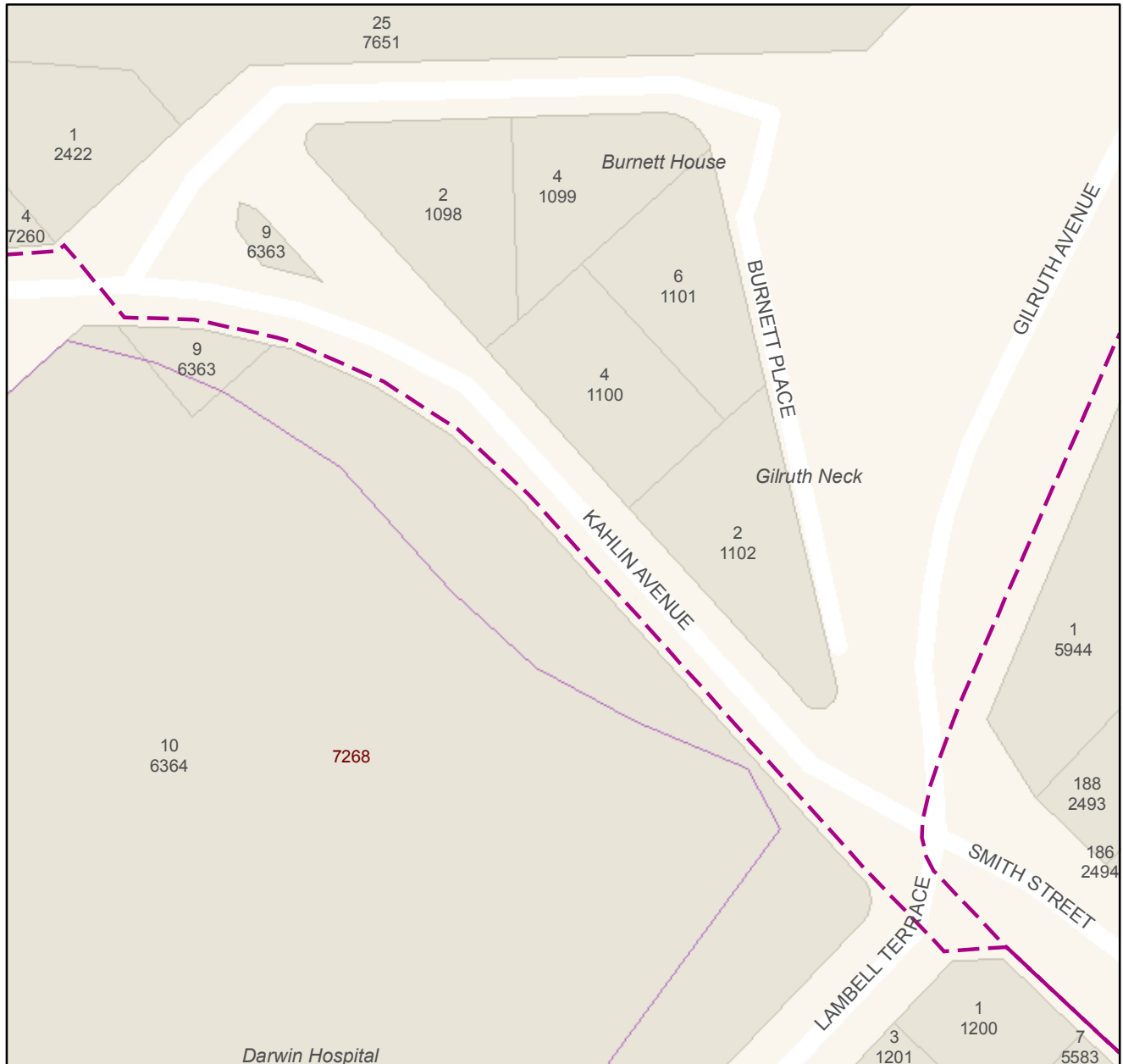
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LOCATION PLAN - Comms



Not to scale



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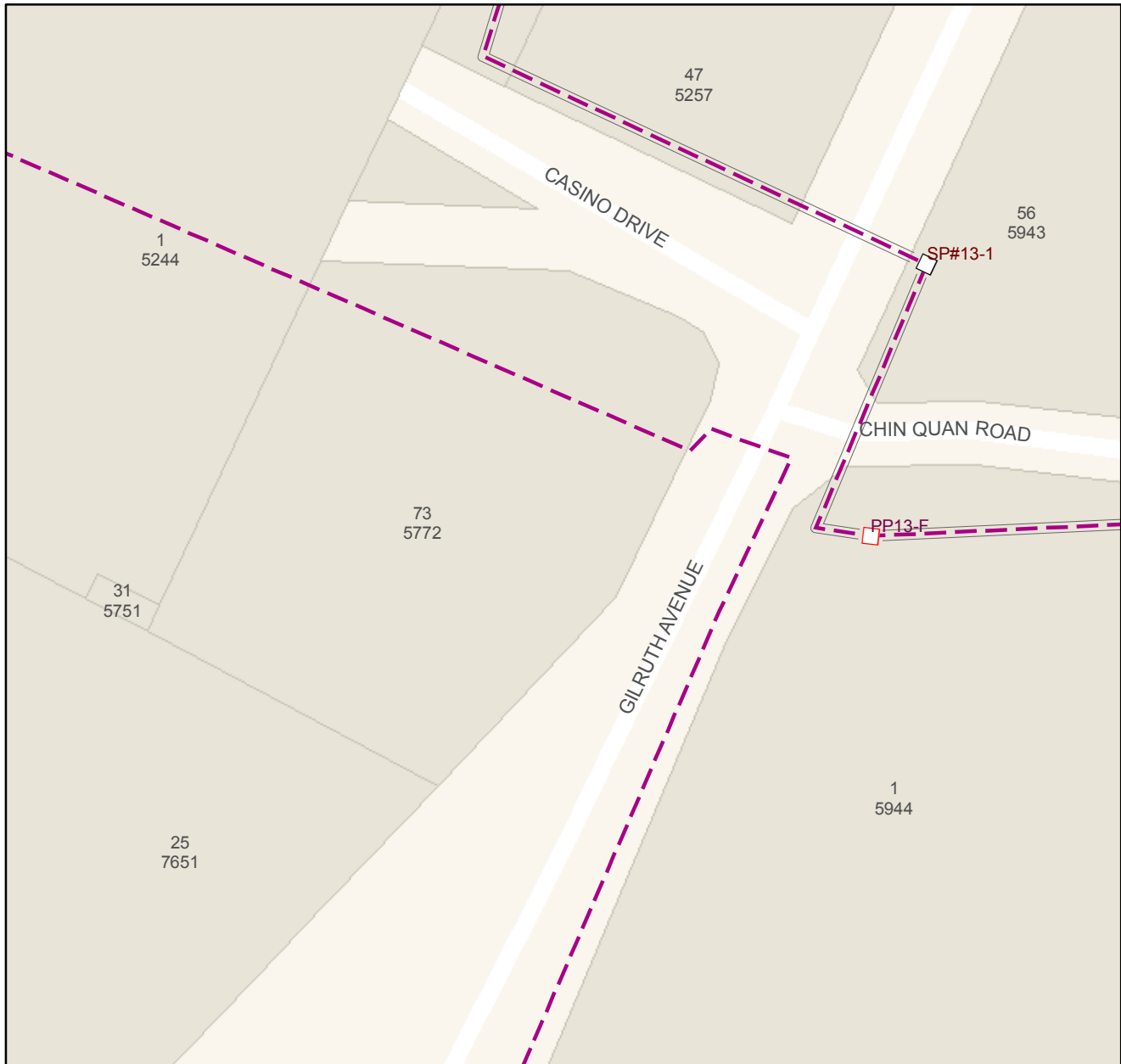
DBYD Infrastructure Location Advice

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LOCATION PLAN - Comms



Not to scale



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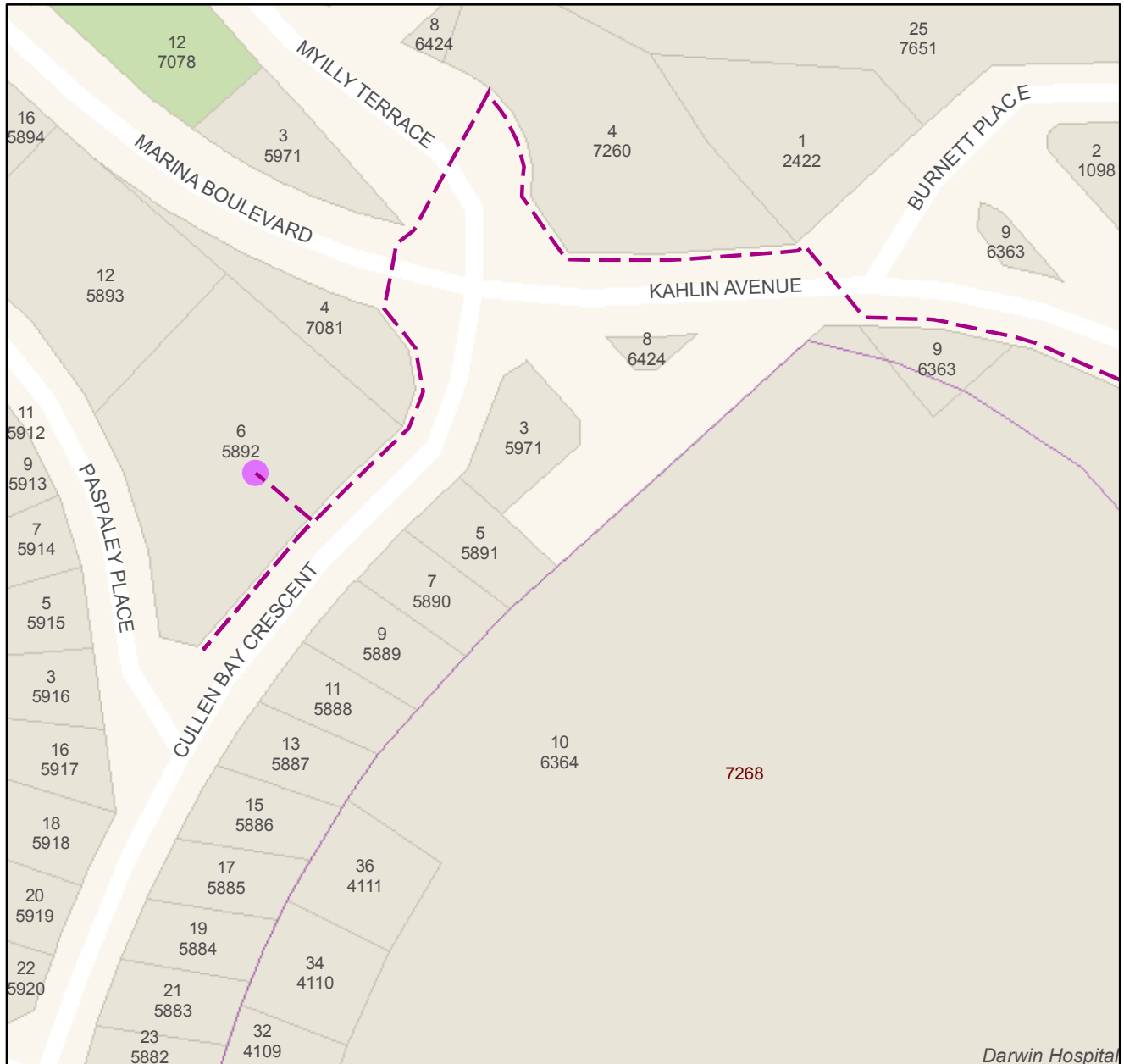
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LOCATION PLAN - Comms



Not to scale



Darwin Hospital


Date of Issue: Wednesday, 18 March 2020

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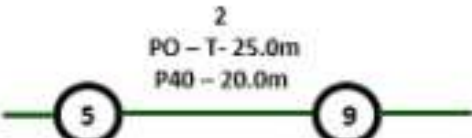
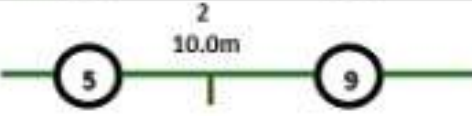





Indicative Plans

Issue Date:	18/03/2020	 The logo features a red circle with a black border and a diagonal slash. Inside the circle is a black silhouette of a person digging. To the right of the circle, the text 'DIAL BEFORE YOU DIG' is written in bold, black, uppercase letters. Below this, the website 'www.1100.com.au' is written in a smaller font.
Location:	Gilruth Ave , Darwin , NT , 0800	

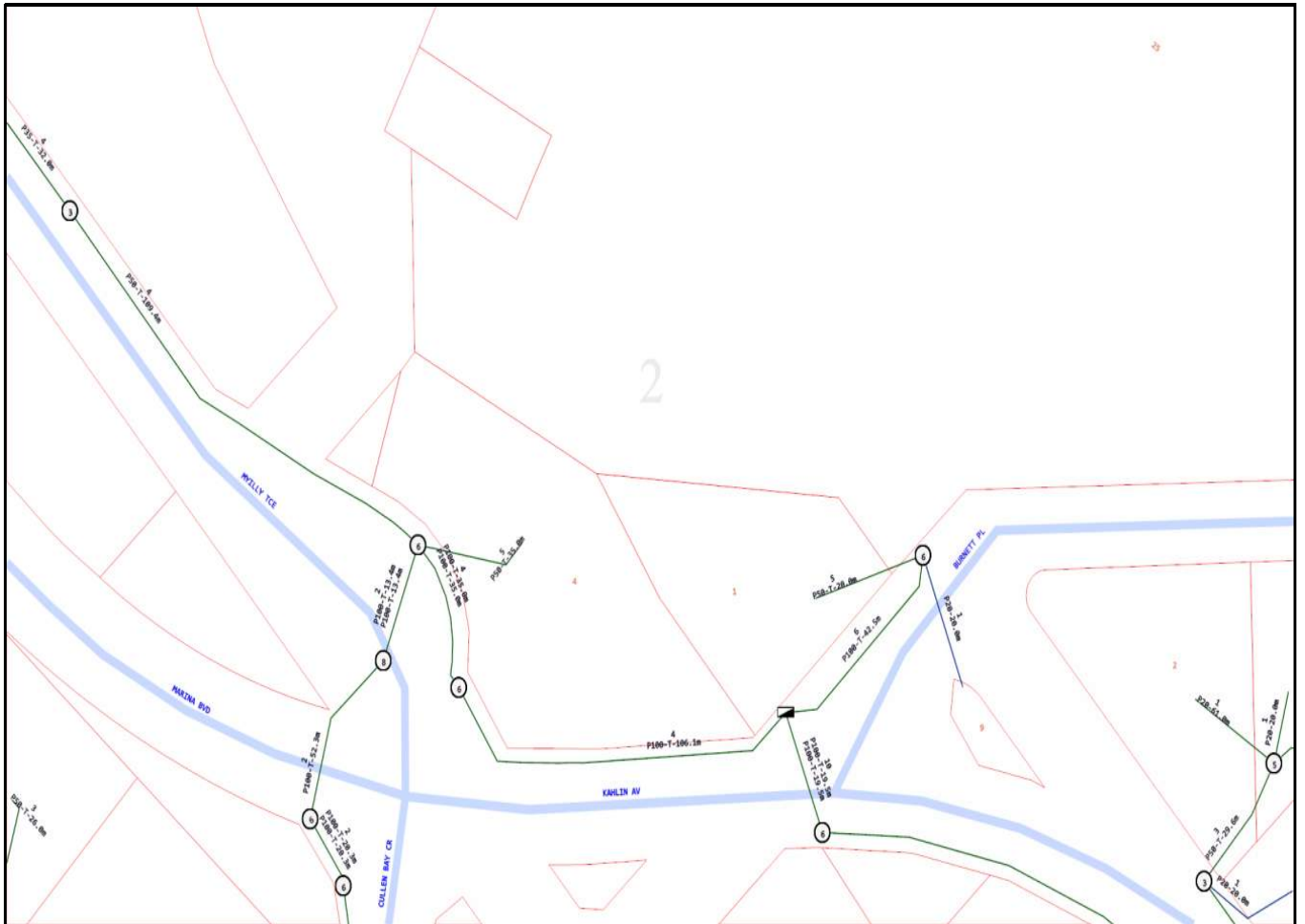
1	3
2	4

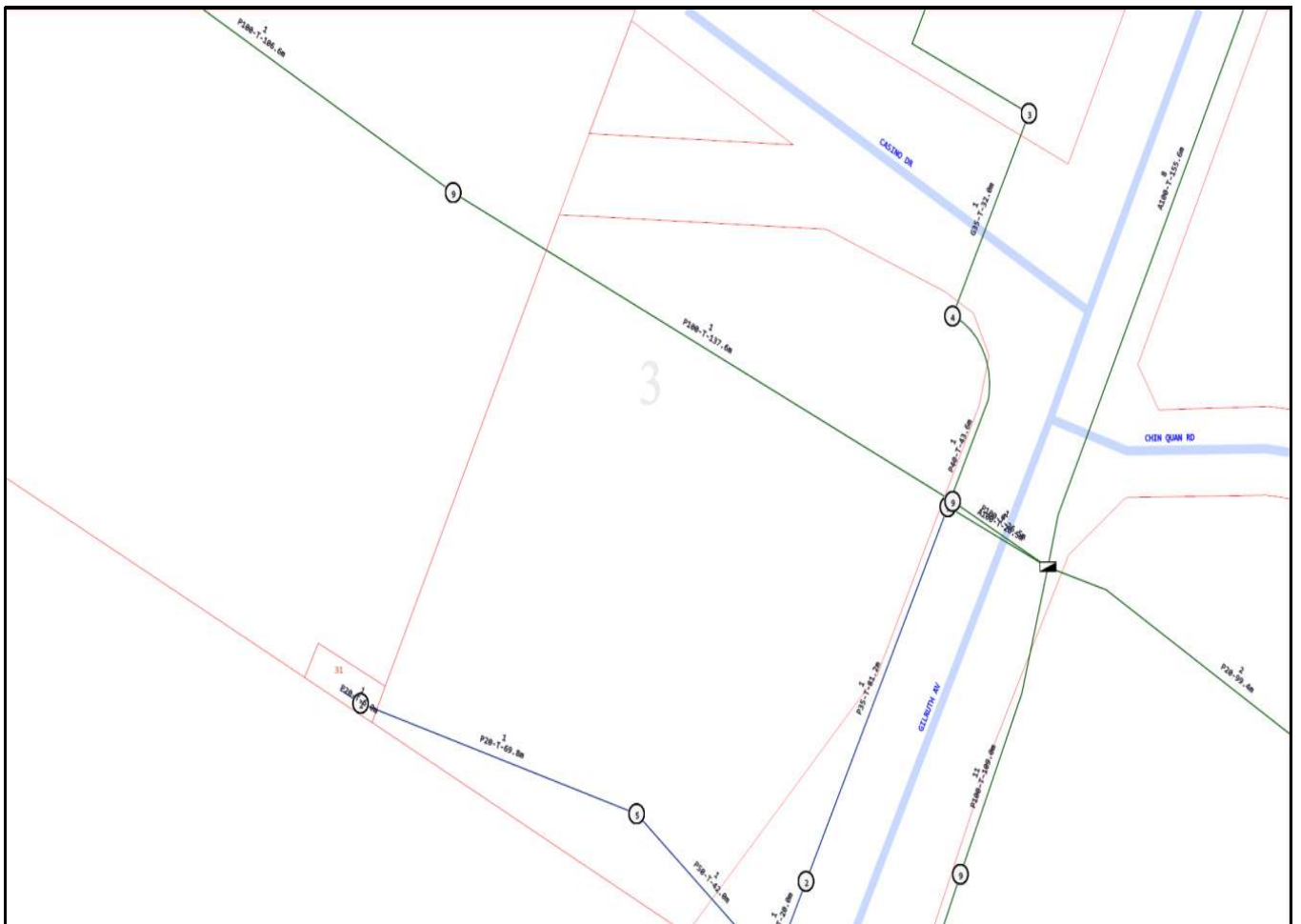


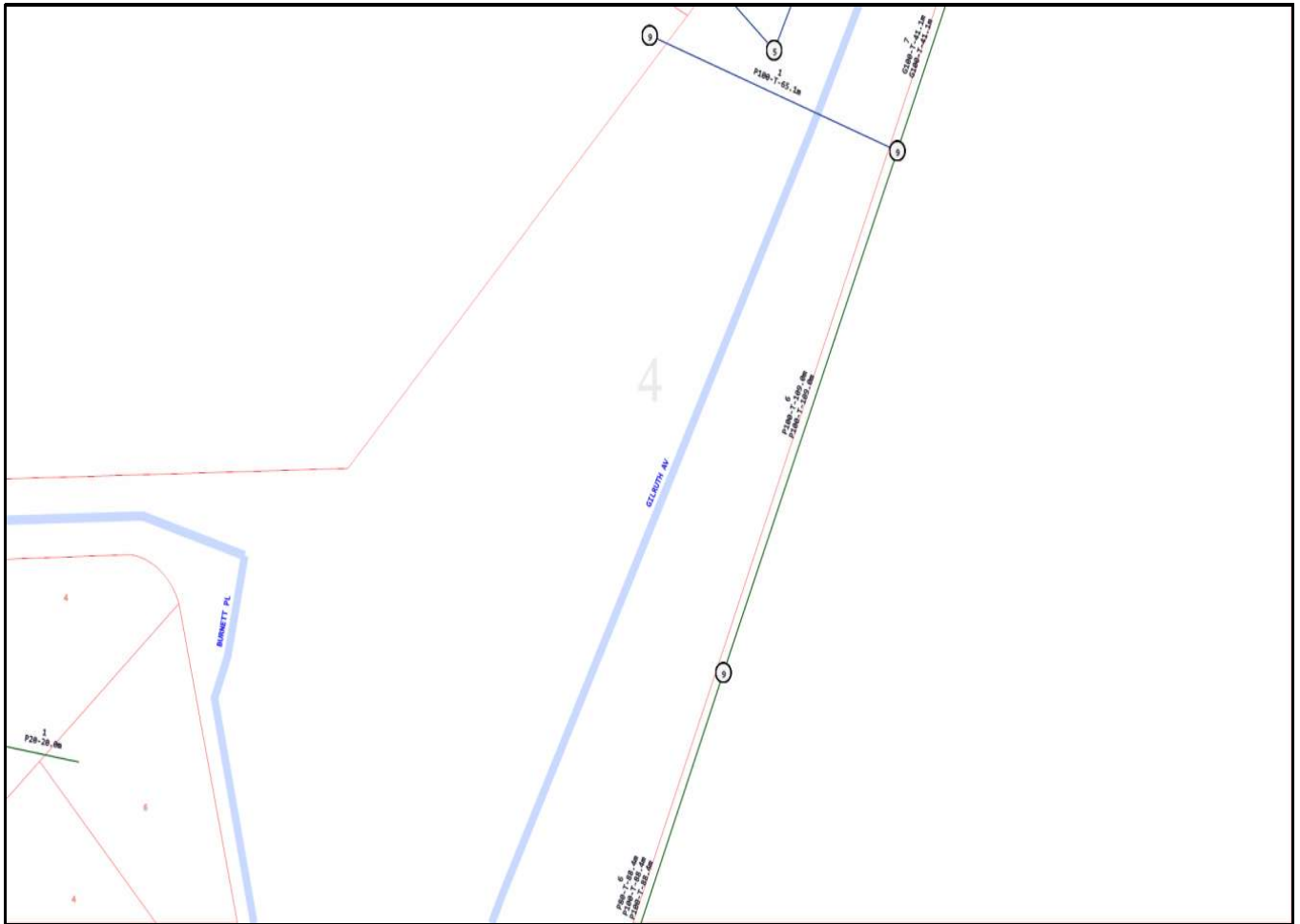
LEGEND

	Parcel and the location
	Pit with size "5"
	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.
	2 Direct buried cables between pits of sizes, "5" and "9" are 10.0m apart.
	Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables.
	Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables.
	Trench containing any INSERVICE/CONSTRUCTED (Power) cables.
	Road and the street name "Broadway ST"
<p data-bbox="360 1861 443 1895">Scale</p>	<p data-bbox="679 1816 1139 1850">0 20 40 60 Meters</p> <p data-bbox="1091 1861 1187 1895">1:2000</p> <p data-bbox="1023 1895 1257 1928">1 cm equals 20 m</p> 



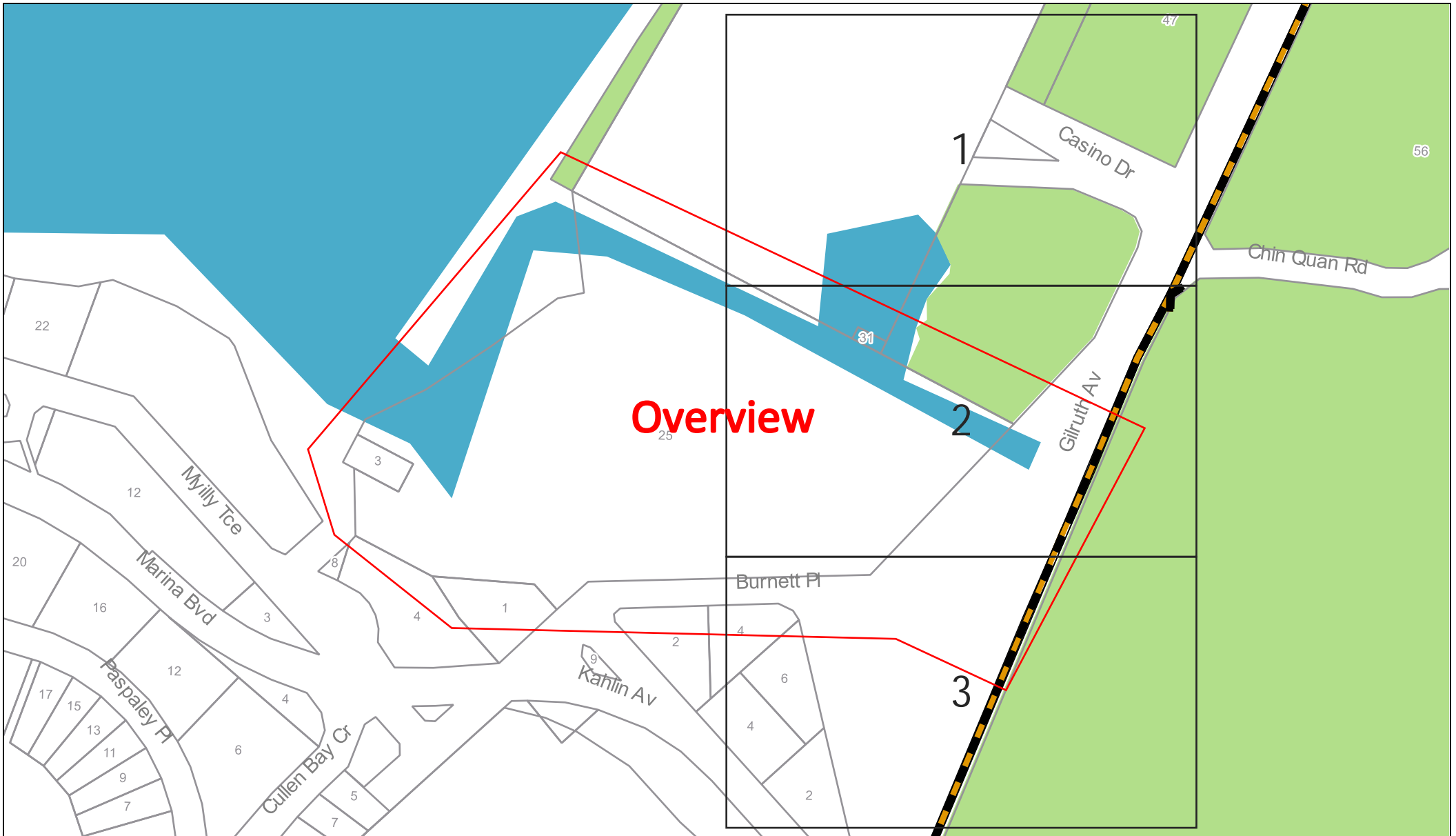






Emergency Contacts

You must immediately report any damage to **nbn**TM network that you are/become aware of. Notification may be by telephone - 1800 626 329.



Sequence Number: 95898236

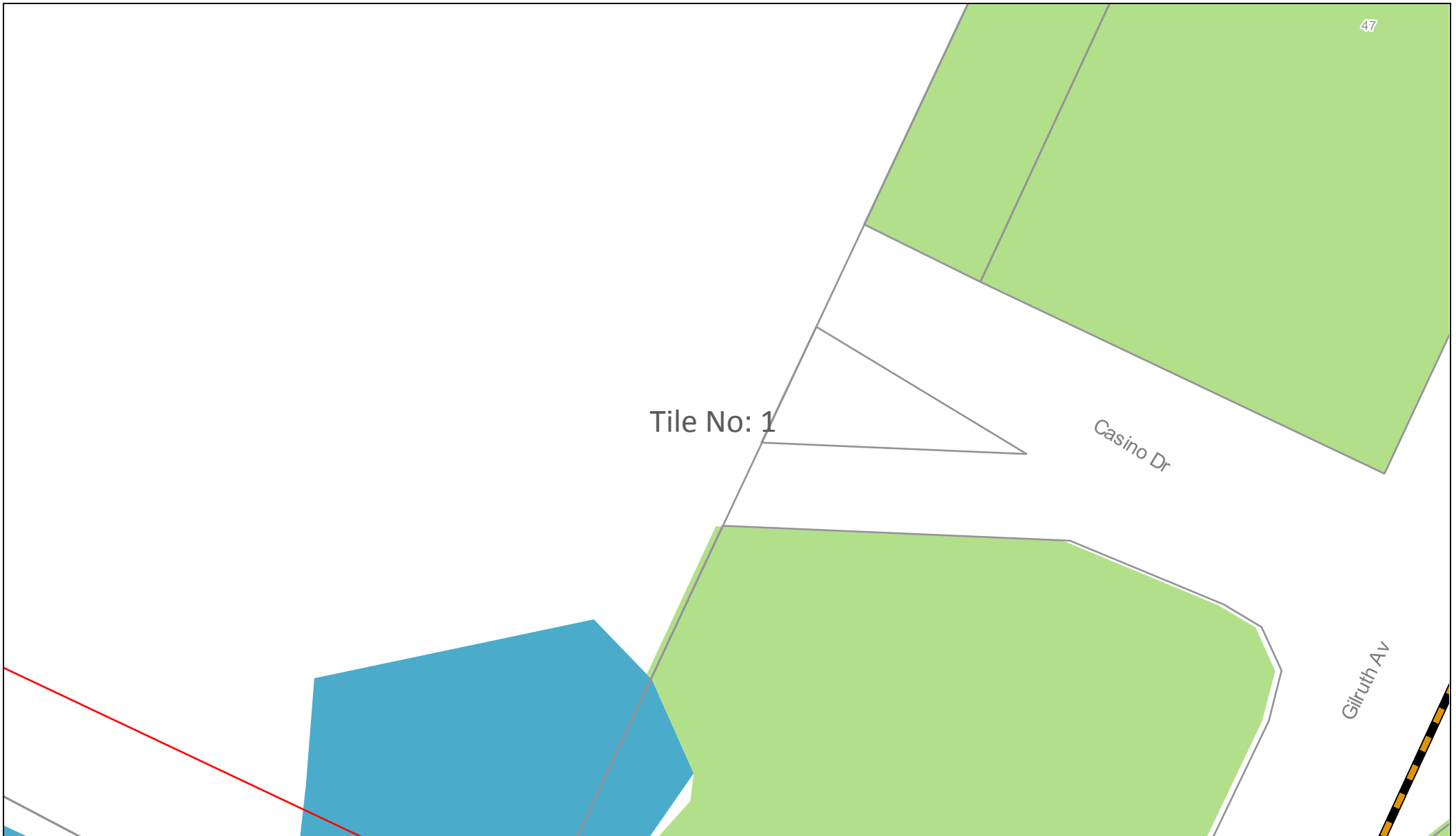
Date: 18/03/2020

DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL NEXTGEN. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIAL SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM NEXTGEN PTY LTD.



LEGEND

- | Digsite | Assets |
|---------|----------------|
| Area | Cable |
| | 3rd Party Duct |
| | Marker Post |



Sequence Number: 95898236

Date: 18/03/2020

DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL NEXTGEN. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIALY SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM NEXTGEN PTY LTD.



LEGEND

- | Digsite | Assets |
|---------|----------------|
| Area | Cable |
| | 3rd Party Duct |
| | Marker Post |



Sequence Number: 95898236

Date: 18/03/2020

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LEGEND

Digsite



Area



Assets

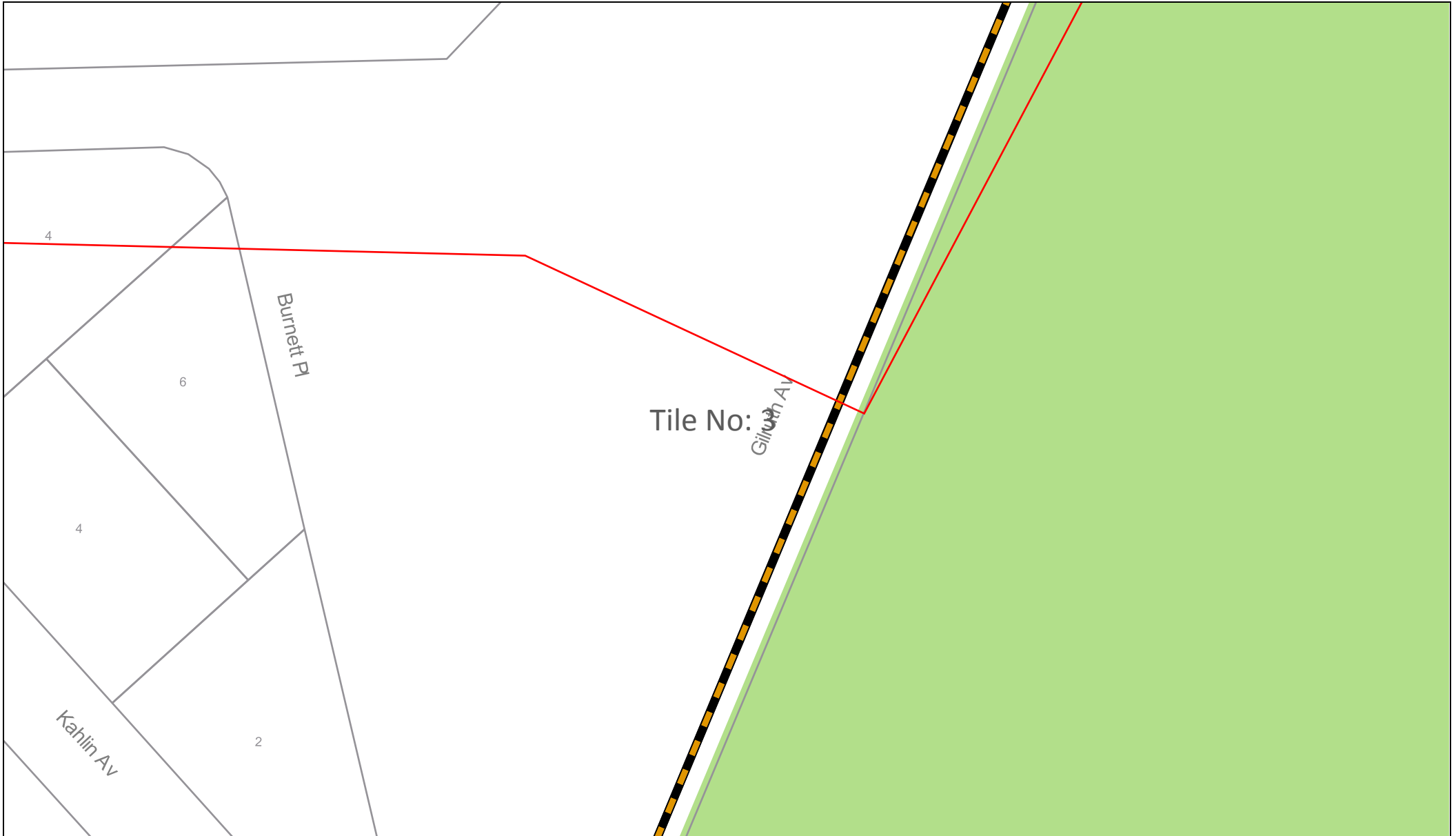
Cable



3rd Party Duct



Marker Post



Sequence Number: 95898236

Date: 18/03/2020

DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL NEXTGEN. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIAL SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM NEXTGEN PTY LTD.



LEGEND

- | Digsite | Assets |
|---------|----------------|
| Area | Cable |
| | 3rd Party Duct |
| | Marker Post |



Response Cover Letter

Date: 18/03/2020

PIPE Networks
Level 17, 127 Creek St
Brisbane QLD 4000
Phone: +61 732339895
Fax: +61 732339880

To:

Mr ADG Engineers - Document Control Customer ID: 1525565
ADG Engineers (Aust) Pty Ltd - Mr ADG Engineers - Document Control
GPO Box 2422
Darwin
NT
0800

Email: nt@adgce.com
Phone: 0889446301
Fax: 0889819887
Mobile: Not Supplied

Dear Mr ADG Engineers - Document Control

The following is our response to your Dial Before You Dig enquiry.

Assets Affected: PIPE Networks

Sequence Number: 95898237

Location: Gilruth Ave
Darwin
NT
0800

Commencement Date: 19/03/2020

Please read over the attached documents for more information about your enquiry.

DISCLAIMER: No responsibility/liability is taken by PIPE Networks for any inaccuracy, error, omission or action based on the information supplied in this correspondence.

Note: If the works fall in an area that adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time. **NO WORKS TO COMMENCE PRIOR TO INSPECTION.**



Level 17, PIPE Networks House, 127 Creek Street, Brisbane 4000
PH:(07) 3233 9895 FAX:(07) 3233 9880

Attention: Mr ADG Engineers - Document Control
Fax: 0889819887
DBYD Enquiry Number: 95898237

Date: 18/03/2020

Location: Gilruth Ave
Darwin
NT
0800

DBYD ENQUIRY RETURN:

PIPE Networks **DOES** own or operate telecommunications network infrastructure within the area detailed above.

The affected network **is contained in the PIPE Networks duct network** and can be found on **PIPE Networks** own network plans.

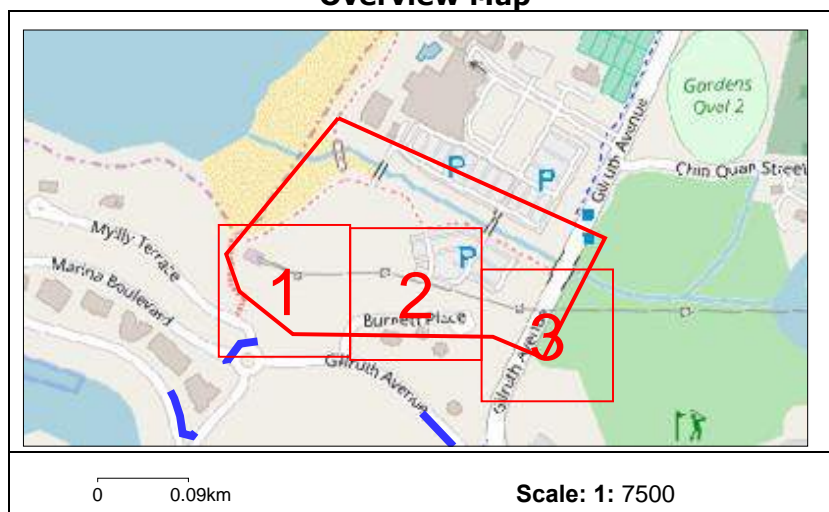
This network is vital to our operations and as such, it is critical that no works commence within the area until a PIPE Networks representative has contacted you.

A PIPE Networks representative will contact you within 24 hours to further discuss your intended works. If you do not hear from PIPE networks within 24hours please call us for assistance.

Due to continued network expansion, this network information can only be considered valid and accurate for 28 days from issue.

PIPE Networks will seek compensation for any damage to its network through negligence or ignorance of your duty of care.

Overview Map



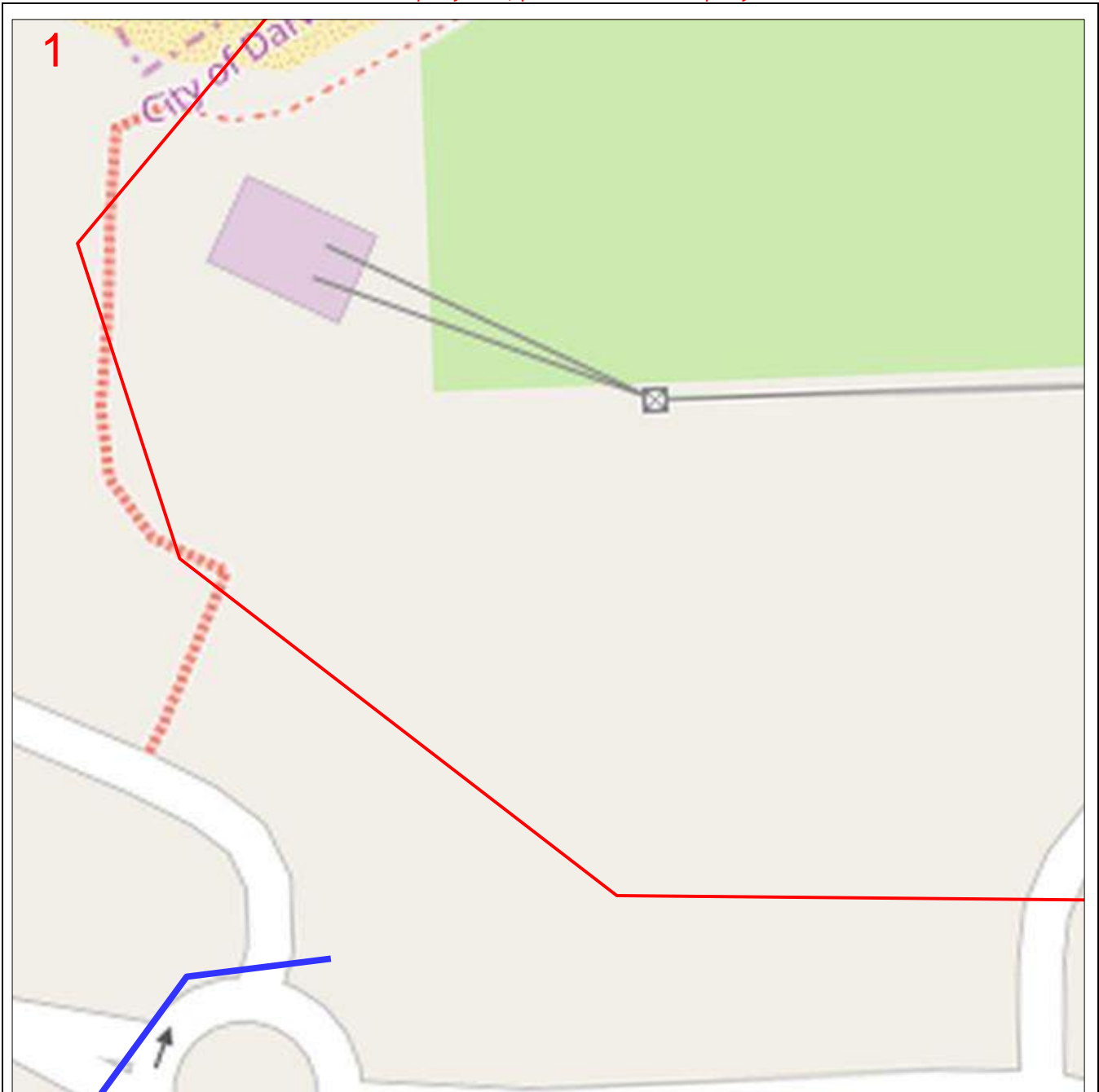
PIPE Networks (for information specific to this job only)
Ph (07) 3233 9895
Email: dbyd@pipenetworks.com

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Note: If the works fall in an area that adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time. **NO WORKS TO COMMENCE PRIOR TO INSPECTION.**

Only PIPE Networks' duct displayed.

For location of PIPE Networks cable in third-party duct, please contact third-party named on attached cover letter.



Enquiry Number: 95898237

Map Sheet: 1

Scale: 1:750

0 0.008km


LEGEND

DBYD Request Area Asset

 Line

 Area

 Manhole

 Duct

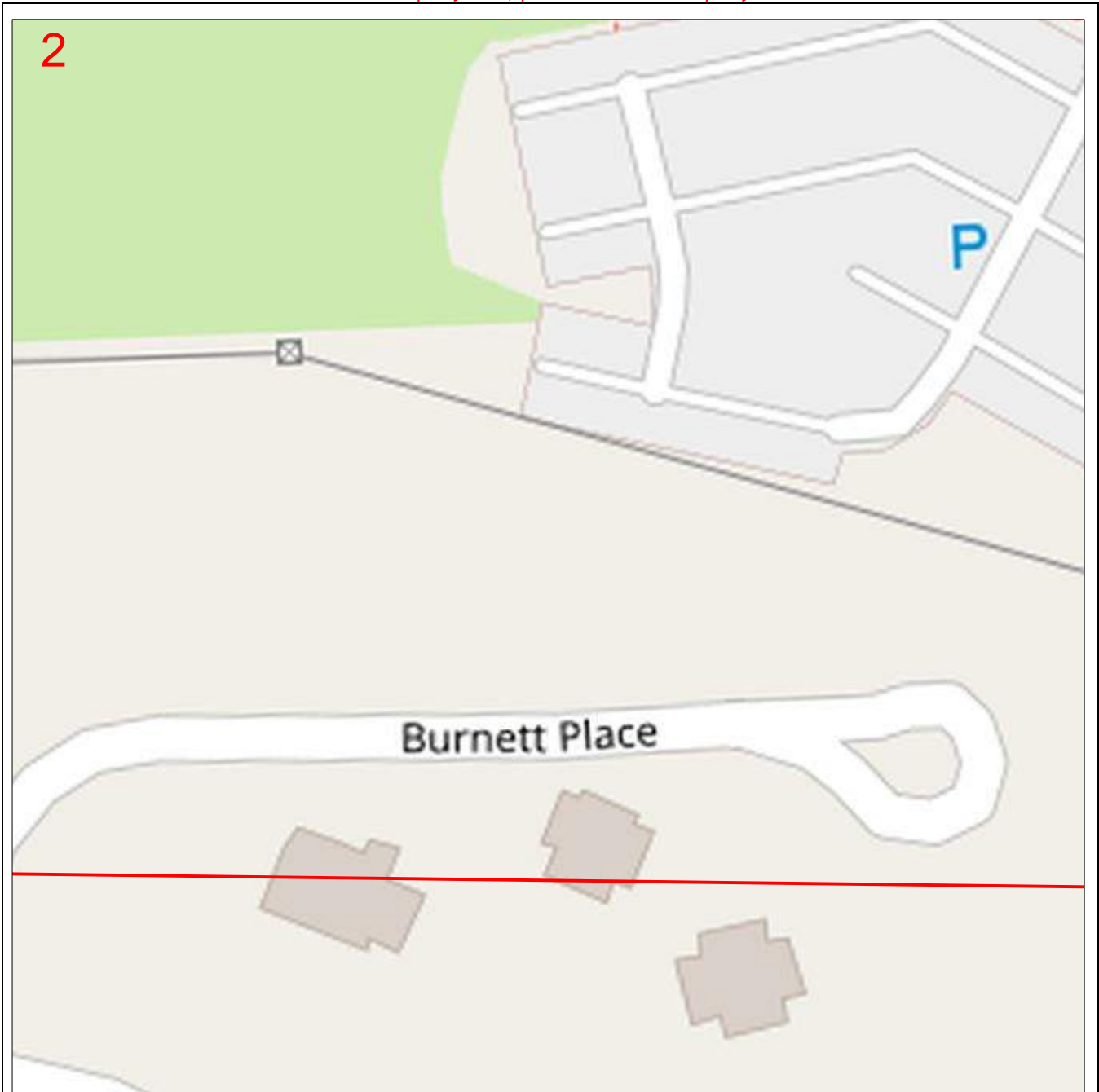


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Note: If the works fall in an area that is adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time. **NO WORKS TO COMMENCE PRIOR TO INSPECTION.**

Only PIPE Networks' duct displayed.

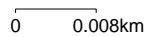
For location of PIPE Networks cable in third-party duct, please contact third-party named on attached cover letter.



Enquiry Number: 95898237

Map Sheet: 2

Scale: 1:750



LEGEND


DBYD Request Area

Asset

 Line

 Manhole

 Area

 Duct

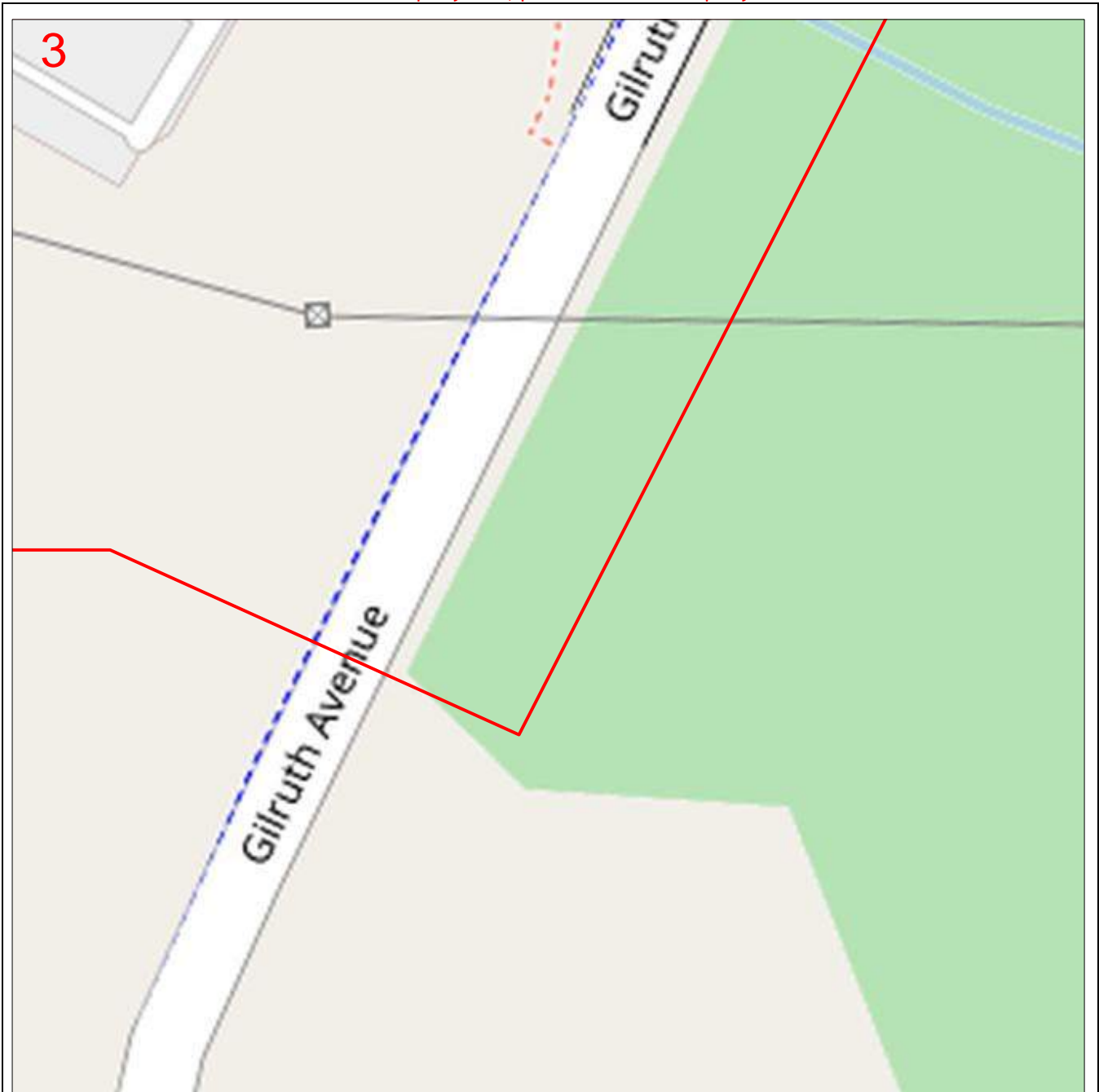


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Note: If the works fall in an area that is adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time. **NO WORKS TO COMMENCE PRIOR TO INSPECTION.**

Only PIPE Networks' duct displayed.

For location of PIPE Networks cable in third-party duct, please contact third-party named on attached cover letter.







Enquiry Number: 95898237

Map Sheet: 3

Scale: 1:750

0 0.008km

LEGEND

DBYD Request Area		Asset	
	Line		Manhole
	Area		Duct



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Note: If the works fall in an area that is adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time. **NO WORKS TO COMMENCE PRIOR TO INSPECTION.**



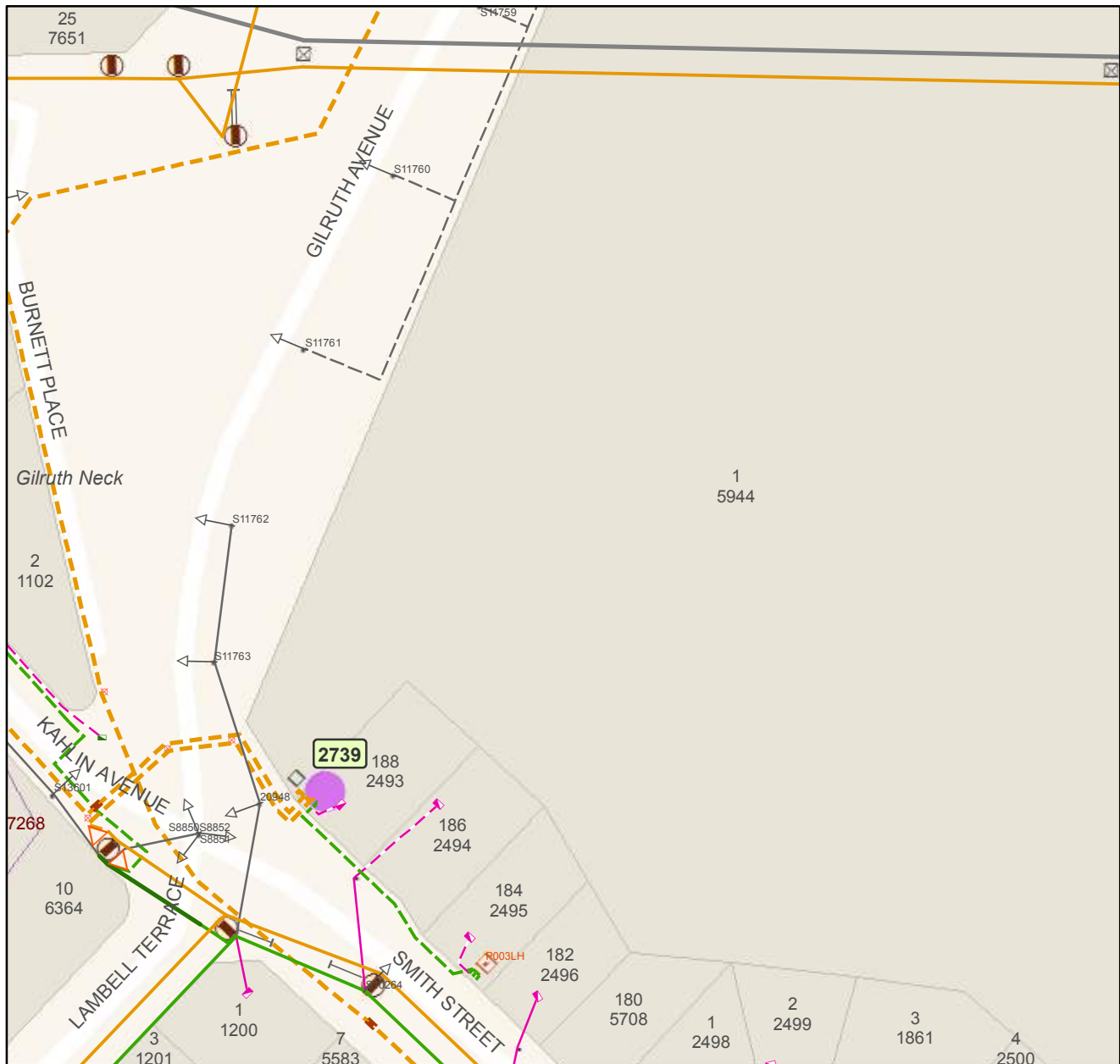
DBYD Infrastructure Location Advice

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- All information provided to you is valid for 30 days from the date of issue

LOCATION PLAN - Power



Not to scale



Date of Issue: Wednesday, 18 March 2020

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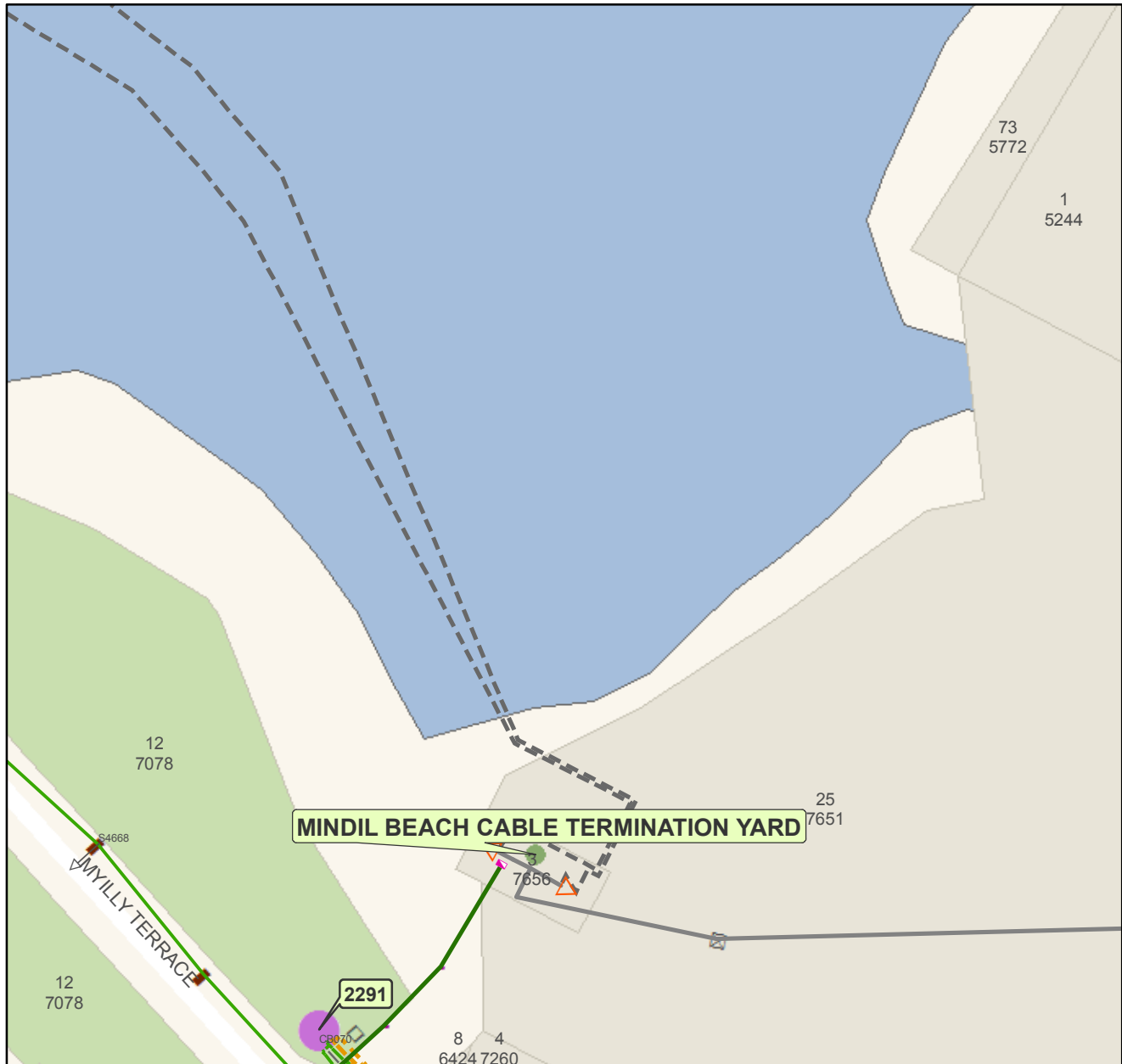
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LOCATION PLAN - Power



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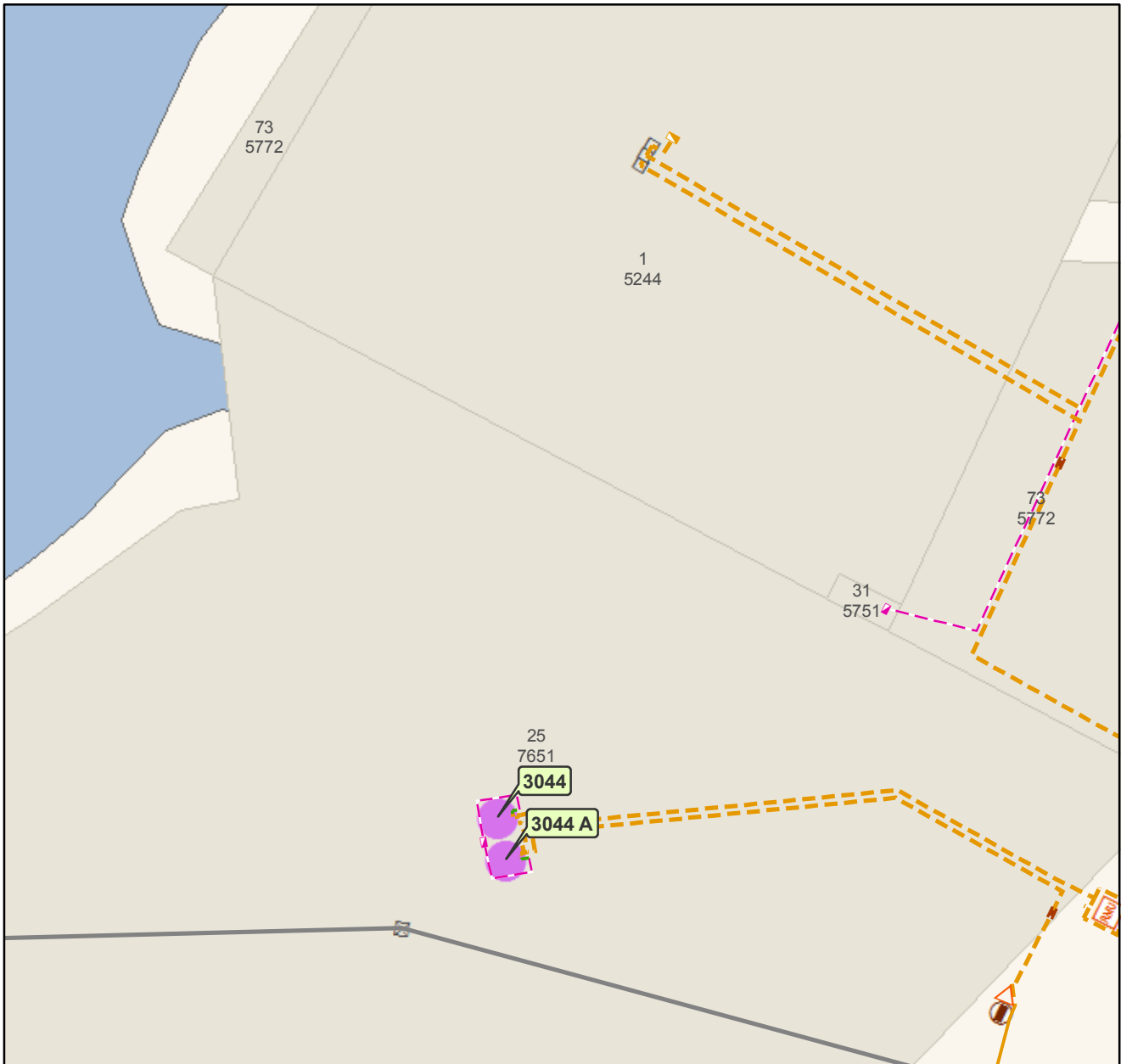
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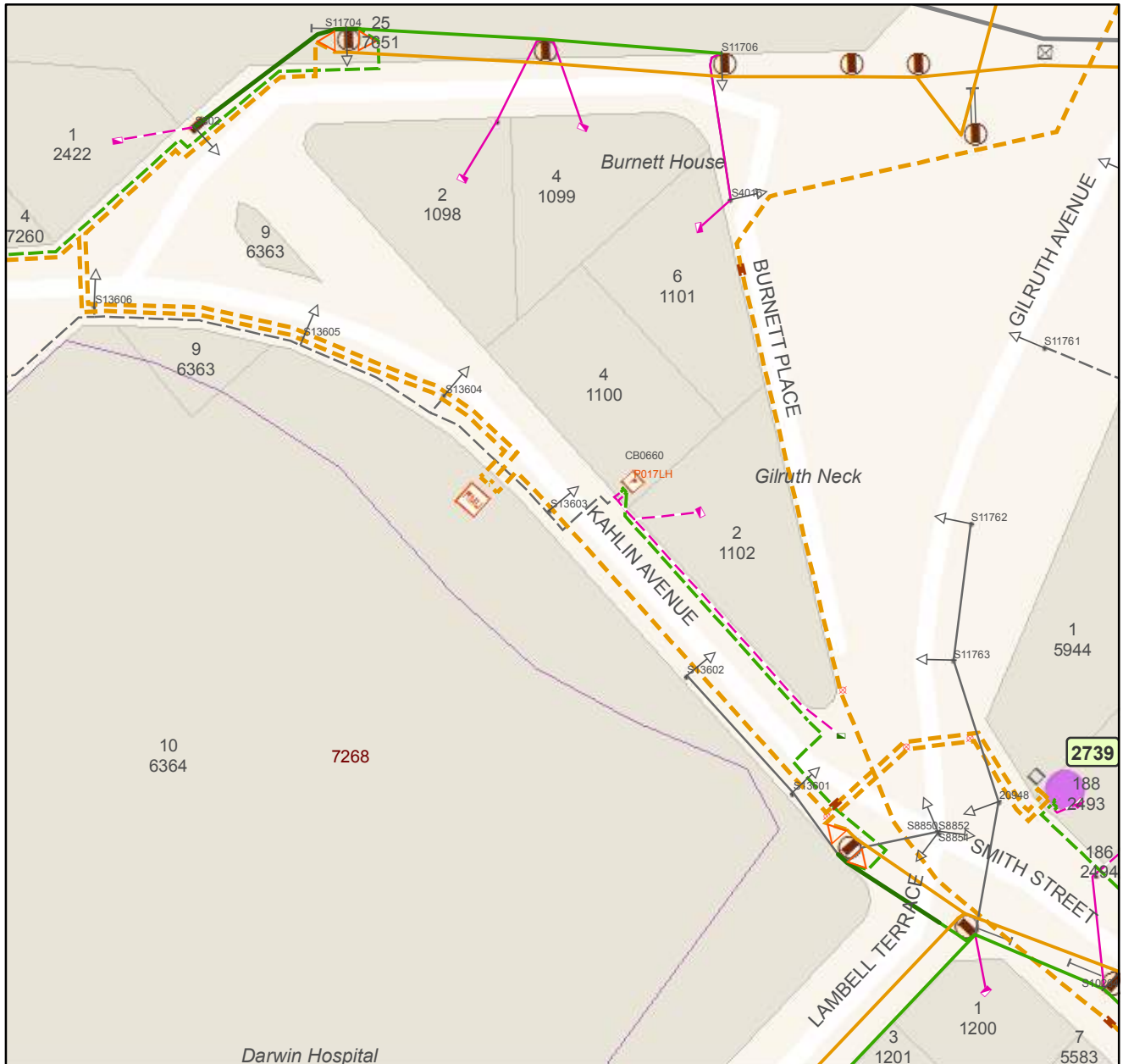
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LOCATION PLAN - Power



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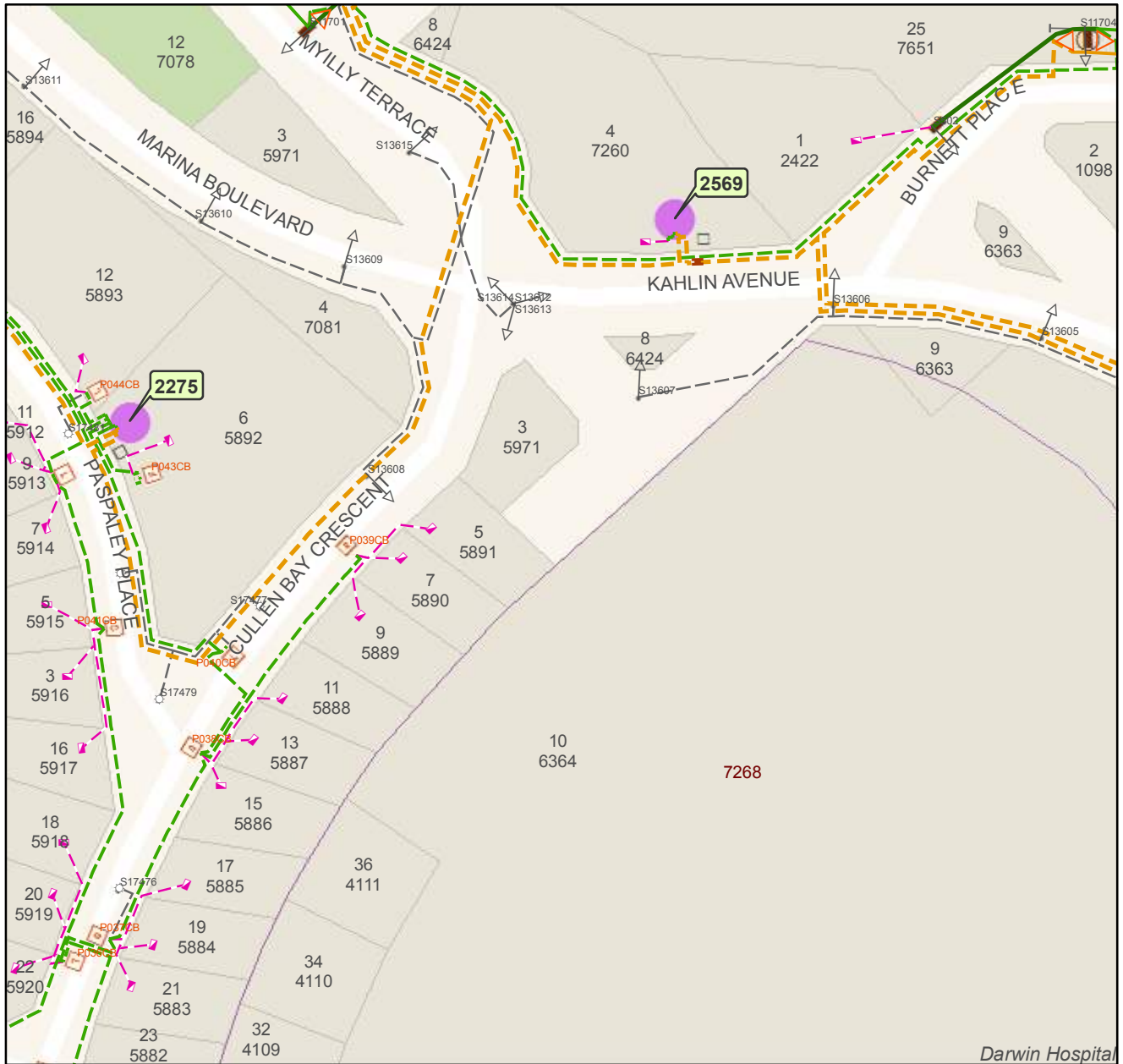
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LOCATION PLAN - Power



Not to scale



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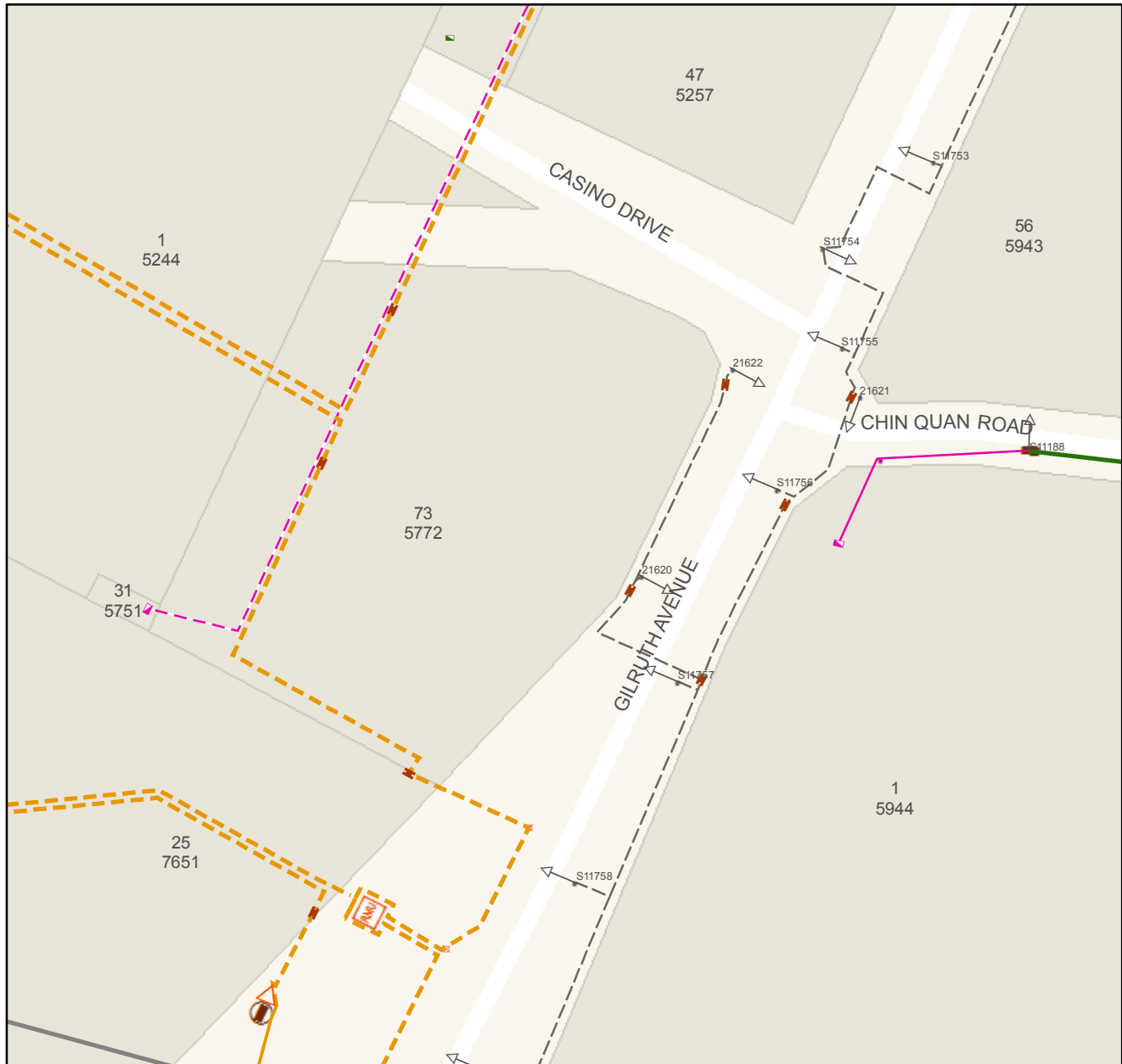
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LOCATION PLAN - Power



Not to scale



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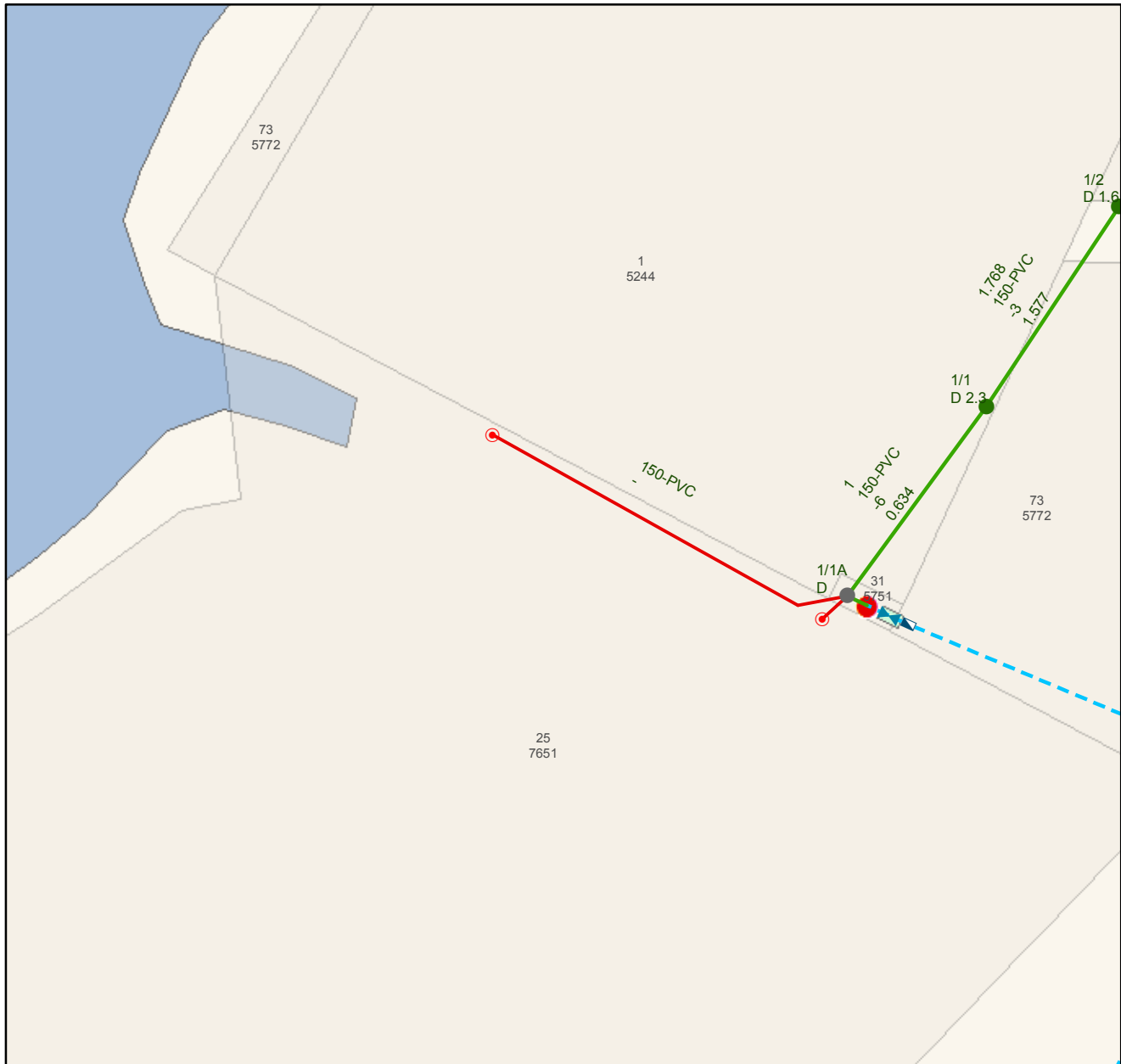
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LOCATION PLAN - Sewer



Not to scale



Date of Issue: Wednesday, 18 March 2020

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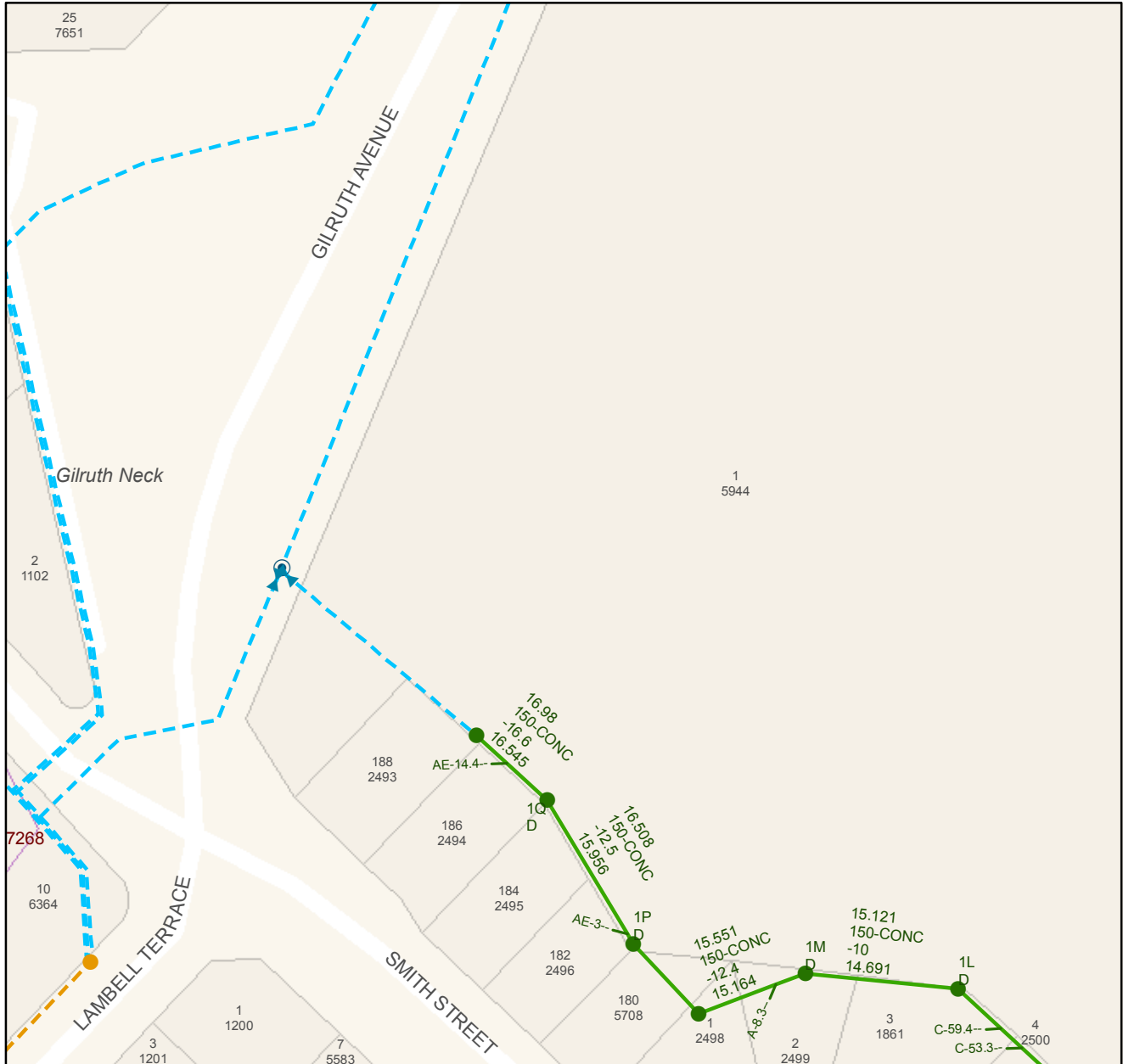
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LOCATION PLAN - Sewer



Not to scale



Date of Issue: Wednesday, 18 March 2020

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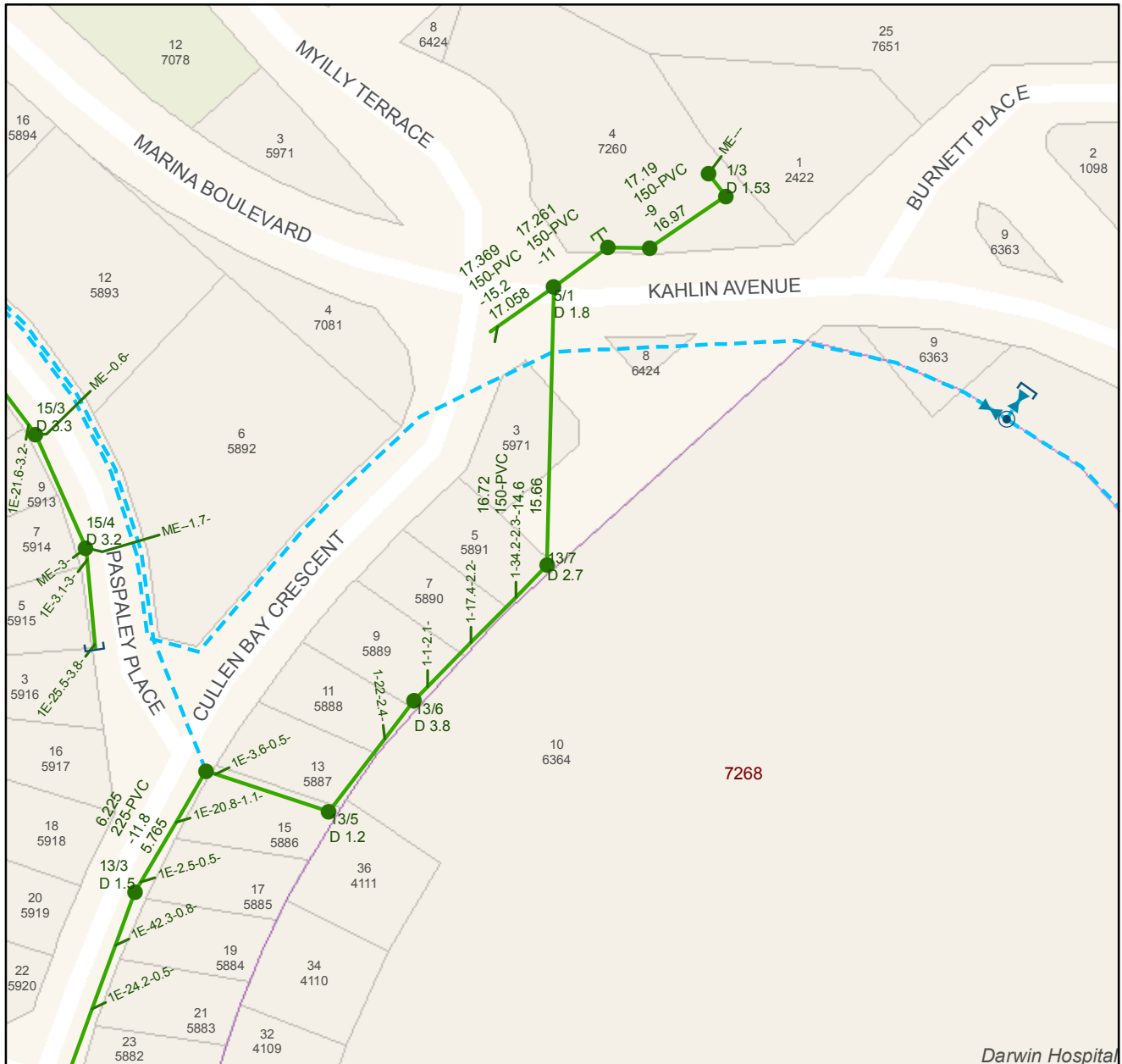
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LOCATION PLAN - Sewer



Not to scale



Date of Issue: Wednesday, 18 March 2020

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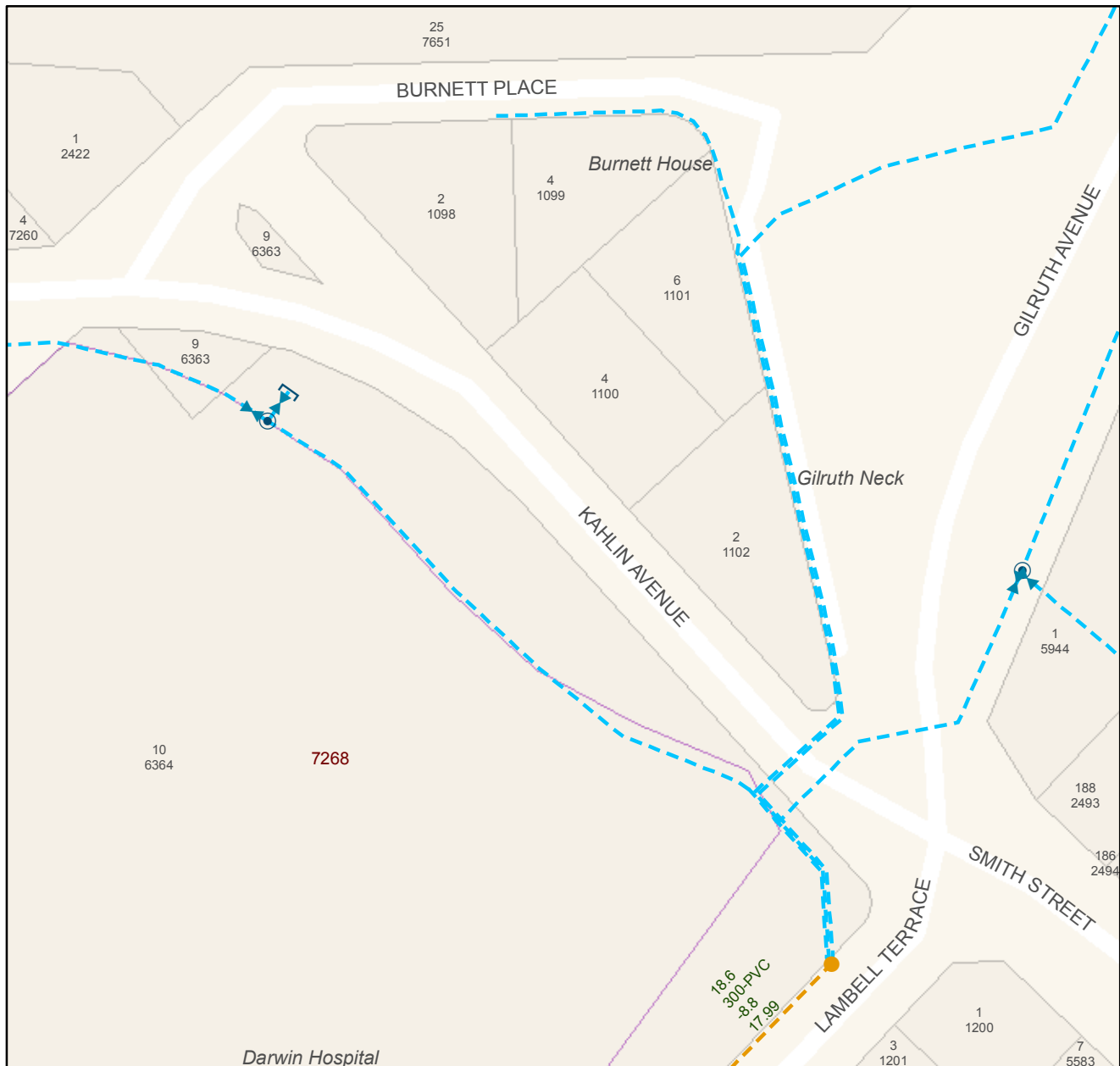
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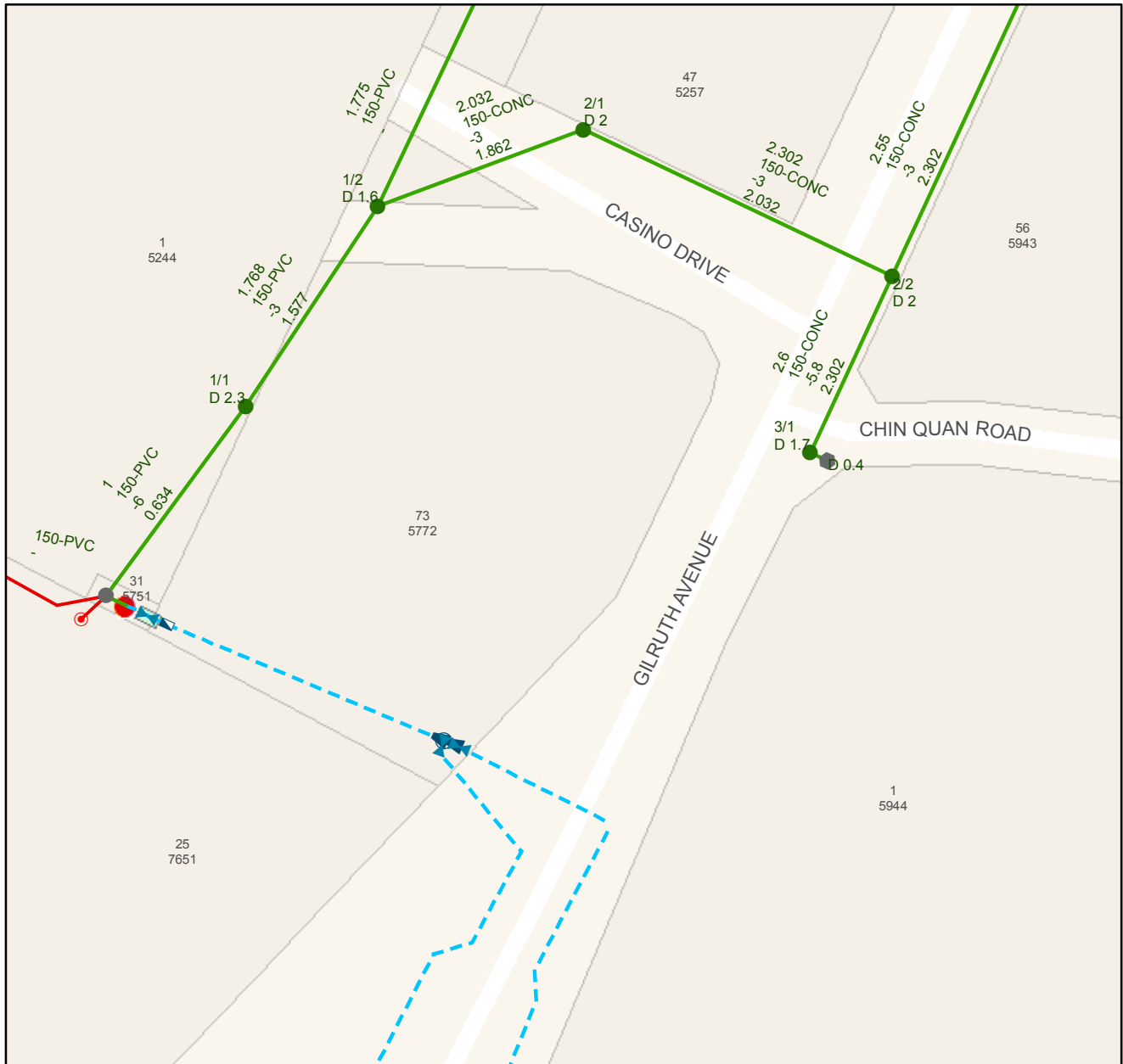
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LOCATION PLAN - Sewer



Not to scale

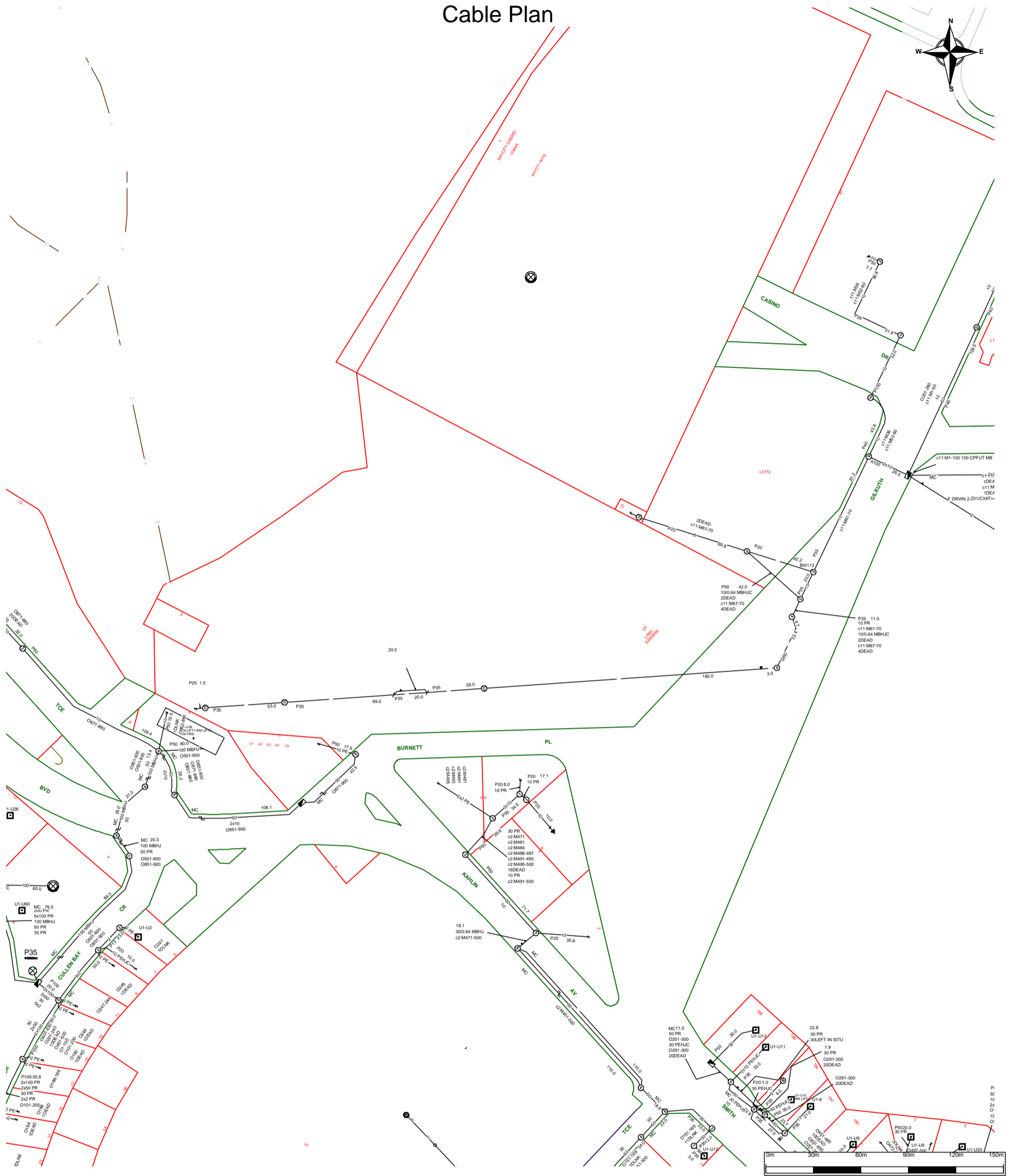


Date of Issue: Wednesday, 18 March 2020

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Cable Plan



For all Telstra DBYD plan enquiries - email - Telstra.Plans@team.telstra.com
For urgent onsite contact only - ph 1800 653 935 (bus hrs)

Sequence Number: 95898238

CAUTION: Critical Network Route in plot area. DO NOT PROCEED with any excavation prior to seeking advice from Telstra Plan Services on : 1800 653 935

TELSTRA CORPORATION LIMITED A.C.N. 051 775 556

Generated On 18/03/2020 11:36:40

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

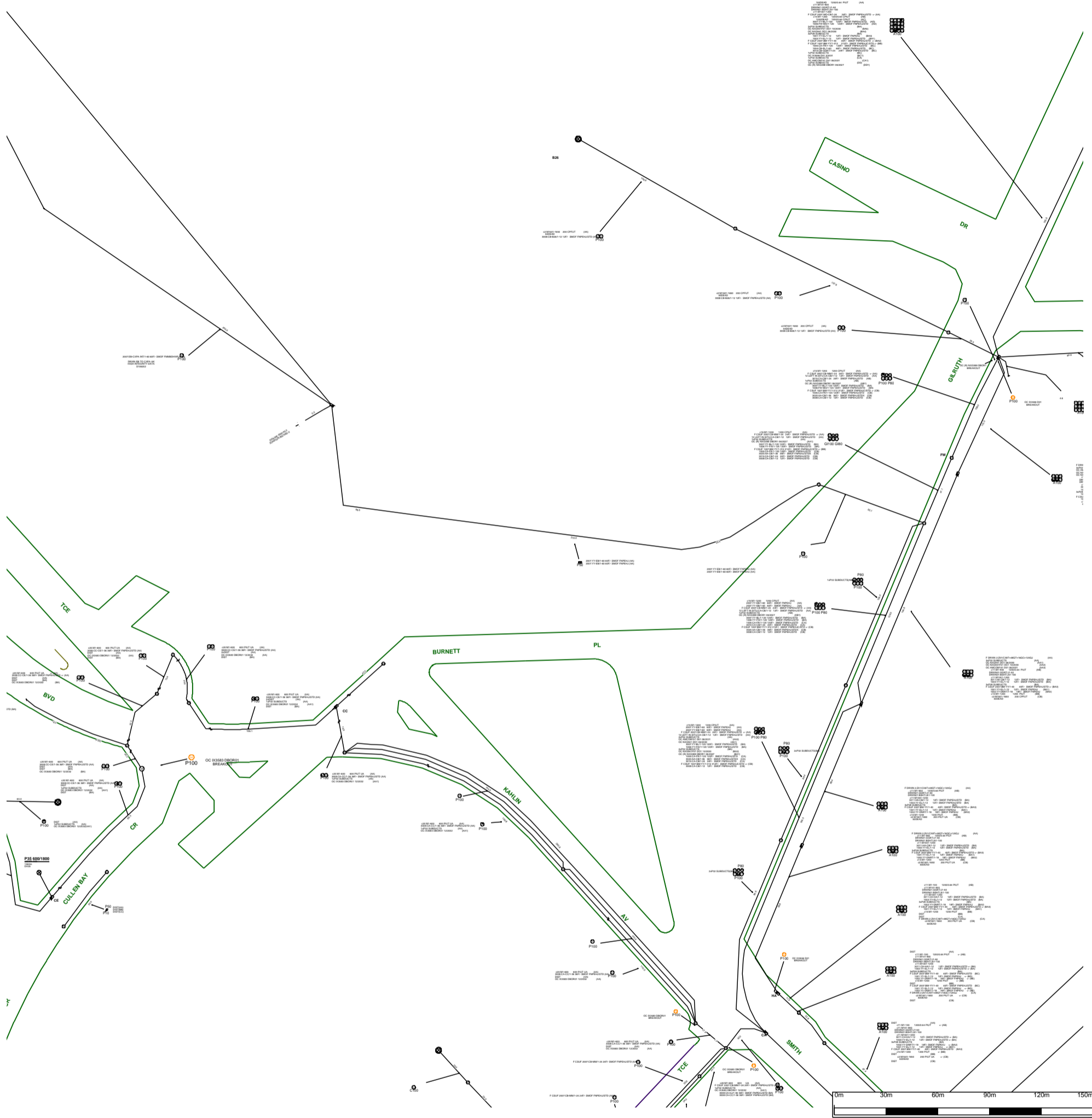
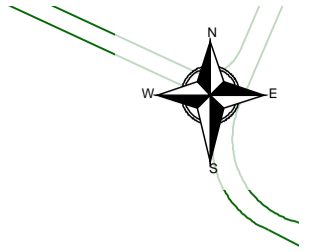
WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

It is your responsibility to locate Telstra's underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.

Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.

Mains Cable Plan



For all Telstra DBYD plan enquiries -
 email - Telstra.Plans@team.telstra.com
 For urgent onsite contact only - ph 1800 653 935 (bus hrs)

Sequence Number: 95898238

**CAUTION: Critical Network Route in plot area.
 DO NOT PROCEED with any excavation prior to
 seeking advice from Telstra Plan Services on :
 1800 653 935**

TELSTRA CORPORATION LIMITED A.C.N. 051 775 556

Generated On 18/03/2020 11:36:44

WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

It is your responsibility to locate Telstra's underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.

Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.



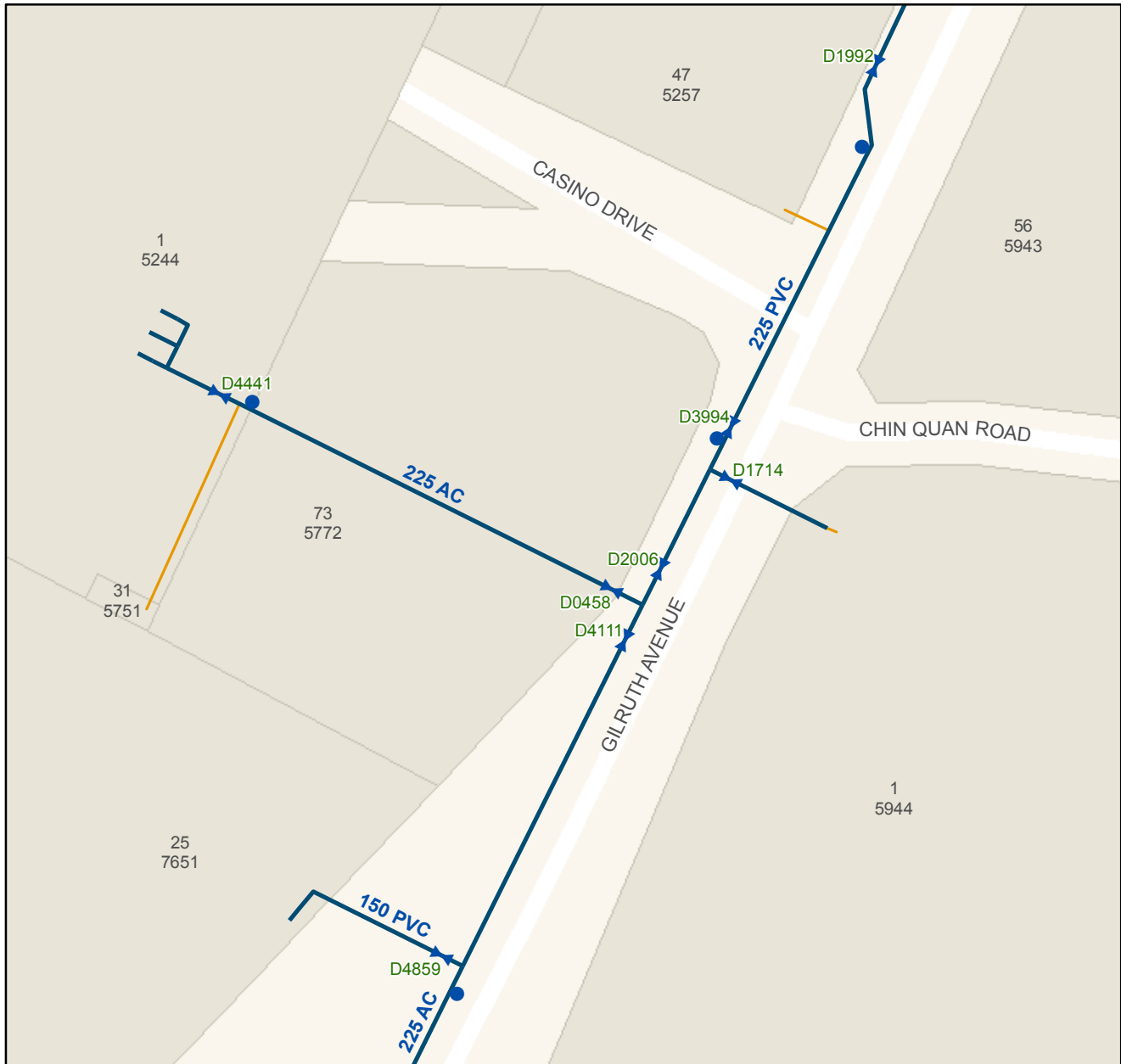
DBYD Infrastructure Location Advice

- **Activities within 3 metres of Power and Water Corporation assets require written approval (AWV or Similar) prior to commencing work.**
- Do not assume depth or alignment of assets. Locations provided are approximate.
- You must read and understand all information supplied before undertaking any works.
- All information provided to you is valid for 30 days from the date of issue

LOCATION PLAN - Water



Not to scale



Date of Issue: Wednesday, 18 March 2020

No warranty is given that the information shown is complete or accurate.

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DBYD Infrastructure Location Advice

- **Activities within 3 metres of Power and Water Corporation assets require written approval (AWV or Similar) prior to commencing work.**
- Do not assume depth or alignment of assets. Locations provided are approximate.
- You must read and understand all information supplied before undertaking any works.
- All information provided to you is valid for 30 days from the date of issue

LOCATION PLAN - Water



Not to scale



Date of Issue: Wednesday, 18 March 2020

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DBYD Infrastructure Location Advice

- Activities within 3 metres of Power and Water Corporation assets require written approval (AWV or Similar) prior to commencing work.
- Do not assume depth or alignment of assets. Locations provided are approximate.
- You must read and understand all information supplied before undertaking any works.
- All information provided to you is valid for 30 days from the date of issue

LOCATION PLAN - Water



Not to scale



Date of Issue: Wednesday, 18 March 2020

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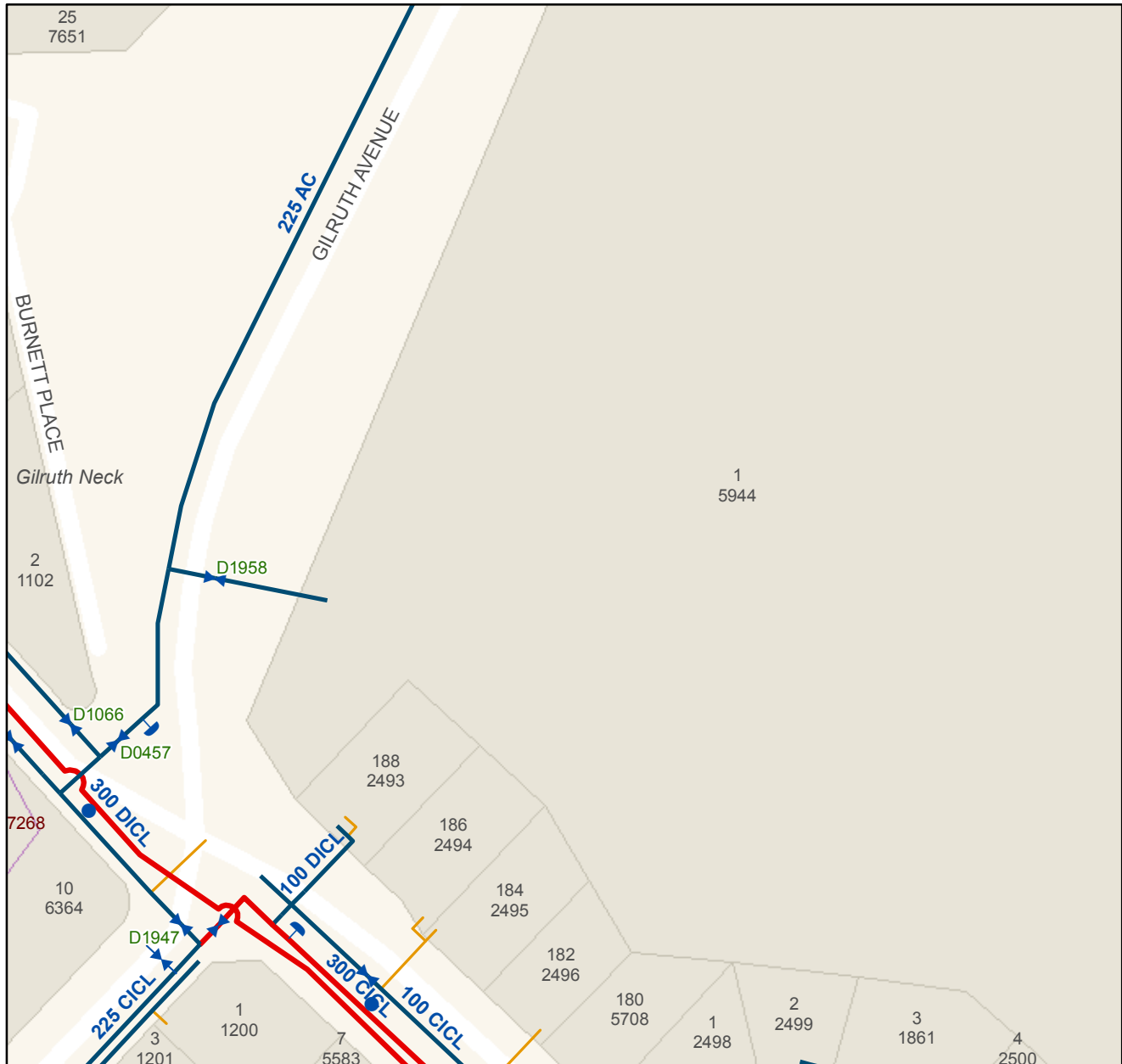
DBYD Infrastructure Location Advice

- **Activities within 3 metres of Power and Water Corporation assets require written approval (AWV or Similar) prior to commencing work.**
- Do not assume depth or alignment of assets. Locations provided are approximate.
- You must read and understand all information supplied before undertaking any works.
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LOCATION PLAN - Water



Not to scale



Date of Issue: Wednesday, 18 March 2020

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DBYD Infrastructure Location Advice

- Activities within 3 metres of Power and Water Corporation assets require written approval (AWV or Similar) prior to commencing work.
- Do not assume depth or alignment of assets. Locations provided are approximate.
- You must read and understand all information supplied before undertaking any works.
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LOCATION PLAN - Water



Not to scale



Date of Issue: Wednesday, 18 March 2020

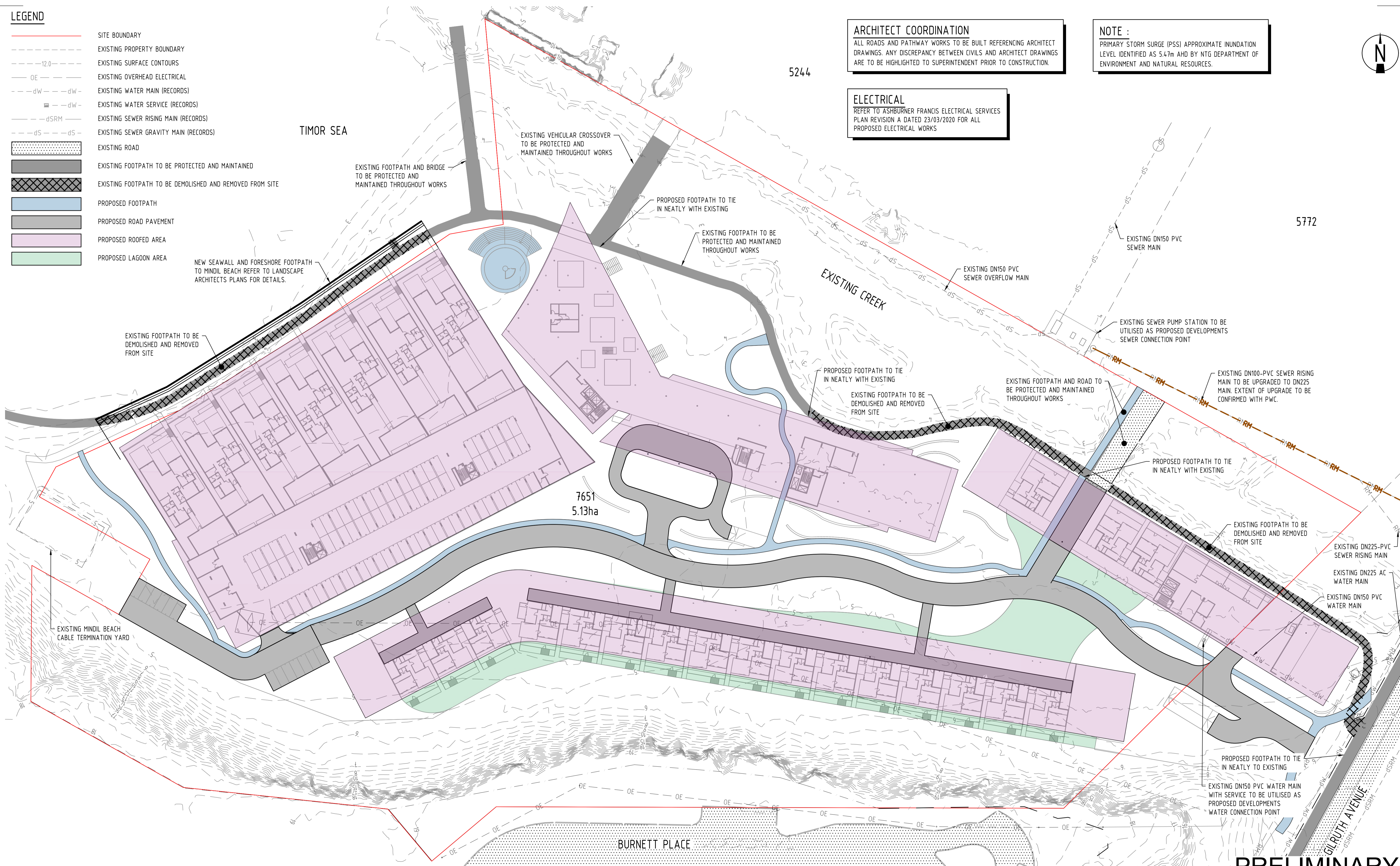
No warranty is given that the information shown is complete or accurate.

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Appendix D Preliminary Layout Plans

LEGEND

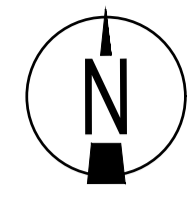
- SITE BOUNDARY
- EXISTING PROPERTY BOUNDARY
- 12.0- EXISTING SURFACE CONTOURS
- OE EXISTING OVERHEAD ELECTRICAL
- dW- EXISTING WATER MAIN (RECORDS)
- dW- EXISTING WATER SERVICE (RECORDS)
- dSRM- EXISTING SEWER RISING MAIN (RECORDS)
- dS- EXISTING SEWER GRAVITY MAIN (RECORDS)
- EXISTING ROAD
- EXISTING FOOTPATH TO BE PROTECTED AND MAINTAINED
- EXISTING FOOTPATH TO BE DEMOLISHED AND REMOVED FROM SITE
- PROPOSED FOOTPATH
- PROPOSED ROAD PAVEMENT
- PROPOSED ROOFED AREA
- PROPOSED LAGOON AREA



ARCHITECT COORDINATION
 ALL ROADS AND PATHWAY WORKS TO BE BUILT REFERENCING ARCHITECT DRAWINGS. ANY DISCREPANCY BETWEEN CIVILS AND ARCHITECT DRAWINGS ARE TO BE HIGHLIGHTED TO SUPERINTENDENT PRIOR TO CONSTRUCTION.

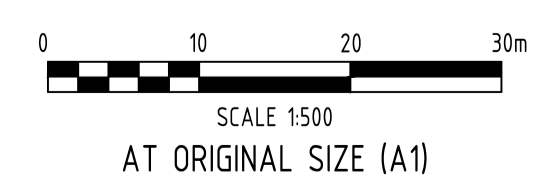
NOTE :
 PRIMARY STORM SURGE (PSS) APPROXIMATE INUNDATION LEVEL IDENTIFIED AS 5.47m AHD BY NTG DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES.

ELECTRICAL
 REFER TO ASHBURNER FRANCIS ELECTRICAL SERVICES PLAN REVISION A DATED 23/03/2020 FOR ALL PROPOSED ELECTRICAL WORKS



**PRELIMINARY
 NOT FOR CONSTRUCTION**

Rev	Date	Description	By	Chk
C	17.06.21	ISSUED FOR DISCUSSION	AM	HD
B	01.02.21	ISSUED FOR DISCUSSION	JMB	HD
A	01.06.20	ISSUED FOR INFORMATION	JMB	HD
















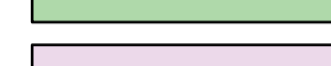

ADG
 Darwin Office
 Suite G01, Manunda Place, 38 Cavenagh Street,
 Darwin, Northern Territory 0800, Australia
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 T 1300 657 402 F +617 3871 2266
 E info@adgce.com W www.adgce.com
 BRISBANE / DARWIN / GOLD COAST / MELBOURNE / PERTH /
 SUNSHINE COAST / SYDNEY / TOOWOOMBA

Client
KTT Investments Pty Ltd
 Project Name
**LITTLE MINDIL BEACH
 THE GARDENS, NORTHERN TERRITORY**

Discipline		Status	
CIVIL		INFORMATION	
Designed By	Checked By	Approved By	
HD	HD	BL	
Project No.	Drawn By	Scale at A1	
23085	JMB	1:1000	

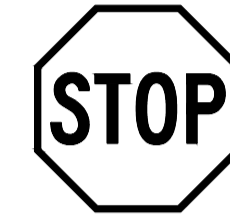
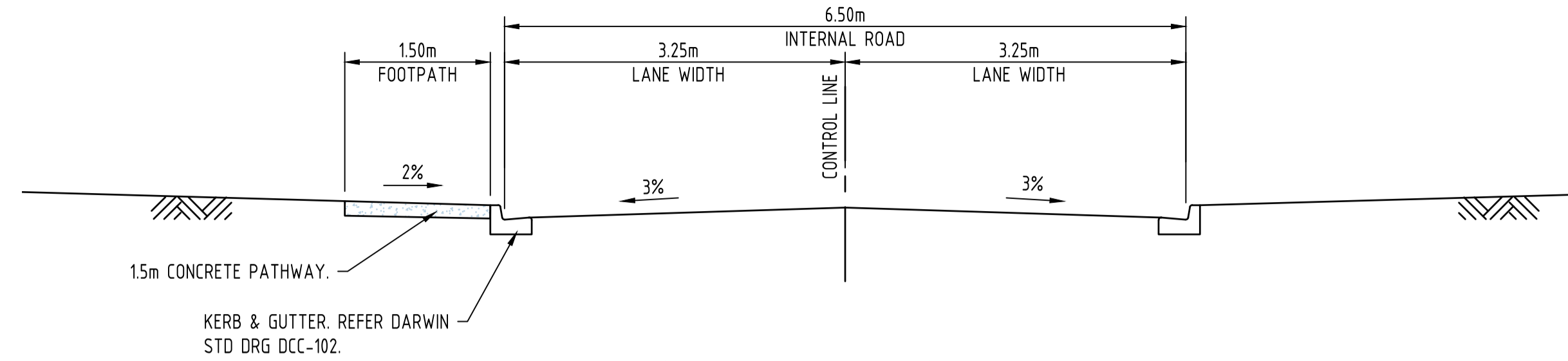
Title	
PRELIMINARY CIVIL SERVICES LAYOUT PLAN	
Drawing No.	Revision
DA_C001	C

LEGEND

-  SITE BOUNDARY
-  PROJECTION OF SITE BOUNDARY
-  EXISTING PROPERTY BOUNDARY
-  EXISTING SURFACE CONTOURS
-  EXISTING OVERHEAD ELECTRICAL
-  EXISTING WATER MAIN (RECORDS)
-  EXISTING SEWER GRAVITY MAIN (RECORDS)
-  EXISTING ROAD
-  PROPOSED ROAD LINEMARKING
-  EXISTING FOOTPATH TO BE PROTECTED AND MAINTAINED
-  EXISTING FOOTPATH TO BE DEMOLISHED AND REMOVED FROM SITE
-  PROPOSED FOOTPATH
-  PROPOSED ROAD PAVEMENT
-  PROPOSED LANDSCAPE MEDIAN/ISLAND
-  PROPOSED ROOFED AREA

NOTES

1. CROSSOVER TO BE PEDESTRIAN AND BICYCLE PRIORITY.
2. ALL LINEMARKING TO BE AS PER NTG STD DRG NO. CS3400
3. REALIGNMENT OF ROAD AND FOOTPATH TO OCCUR IN CITY OF DARWIN ROAD RESERVE AND TO BE COORDINATED/NEGOTIATED WITH CITY OF DARWIN.



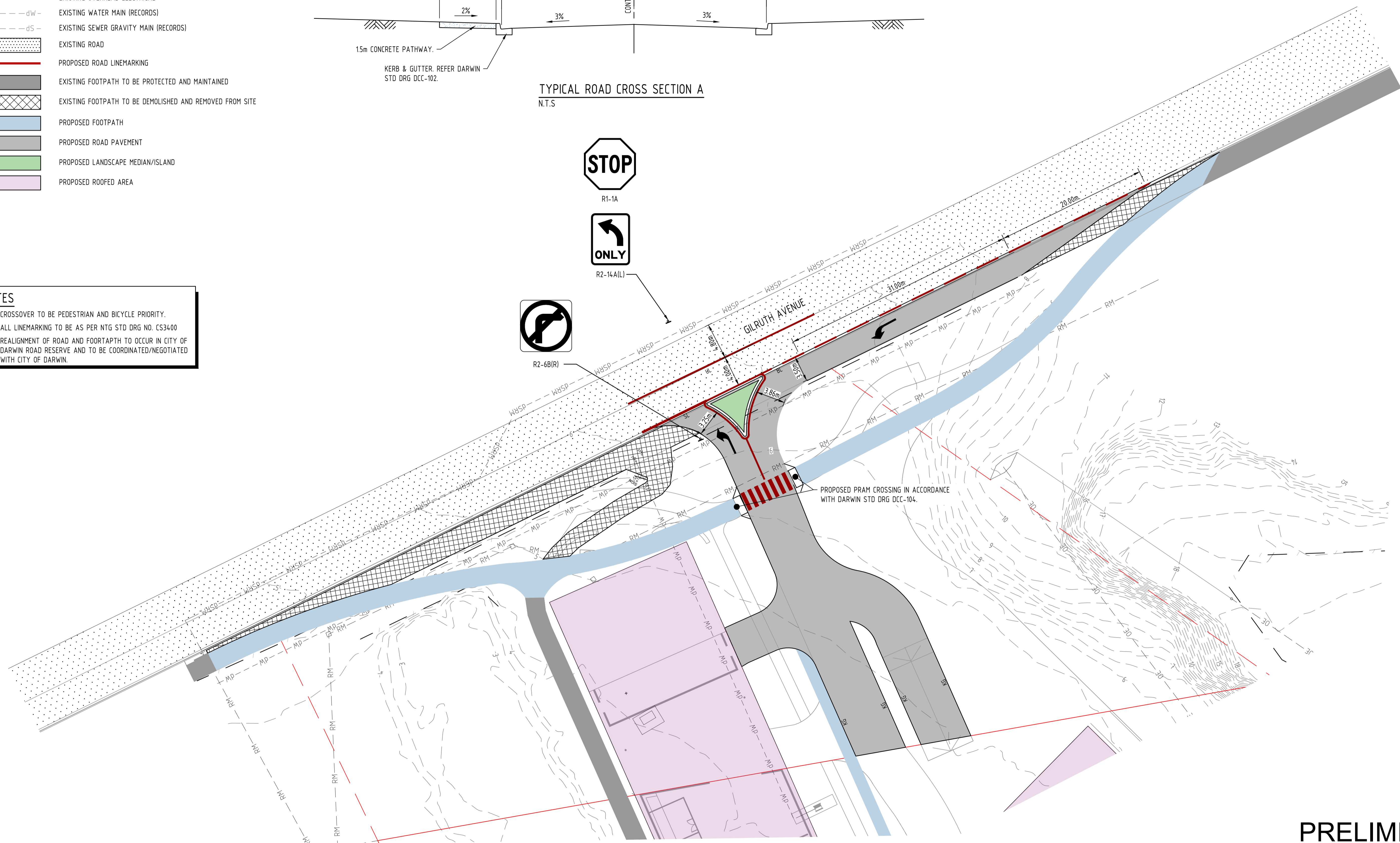
R1-1A



R2-14A(L)

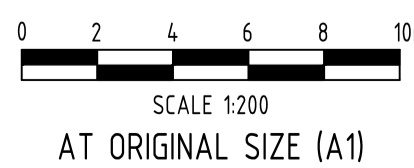


R2-6B(R)



PRELIMINARY
NOT FOR CONSTRUCTION

Rev	Date	Description	By	Chk
C	01.02.21	ISSUED FOR DISCUSSION	JMB	HD
B	05.06.20	ISSUED FOR DISCUSSION	JMB	HD
A	03.06.20	ISSUED FOR DISCUSSION	JMB	HD



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BRISBANE / DARWIN / GOLD COAST / MELBOURNE / PERTH /
SUNSHINE COAST / SYDNEY / TOOWOOMBA

Client
KTT Investments Pty Ltd

Project Name
**LITTLE MINDIL BEACH
THE GARDENS, NORTHERN TERRITORY**

Discipline CIVIL		Status DISCUSSION
Designed By HD	Checked By HD	Approved By BL
Project No. 23085	Drawn By JMB	Scale at A1 1:500

Title DRIVEWAY CROSSOVER OPTION A	
Drawing No. DA_C022	Revision C



Appendix E Electrical Services Plan

ELECTRONIC TRANSFER

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 Check reference scale below to confirm accuracy of drawing reproduction



A	23/03/20	PRELIMINARY ISSUE	CJ
issue	date	description	init.

client
 KTT INVESTMENT PTY LTD
 457 HARRIS ST
 ULTIMO NSW 2007
 AUSTRALIA

Ashburner consulting engineers
 Ashburner Francis
 Ashburner Francis Pty Ltd (A.B.N. 46 009 975 197)

DARWIN
 Suite C102, Wharf 1
 19 Kitchener Drive
 Darwin Waterfront NT 0800
 t: (08) 8942 0585
 e: darwin@ashburnerfrancis.com.au

BRISBANE
TOWNSVILLE
TOOWOOMBA
PERTH
CAIRNS

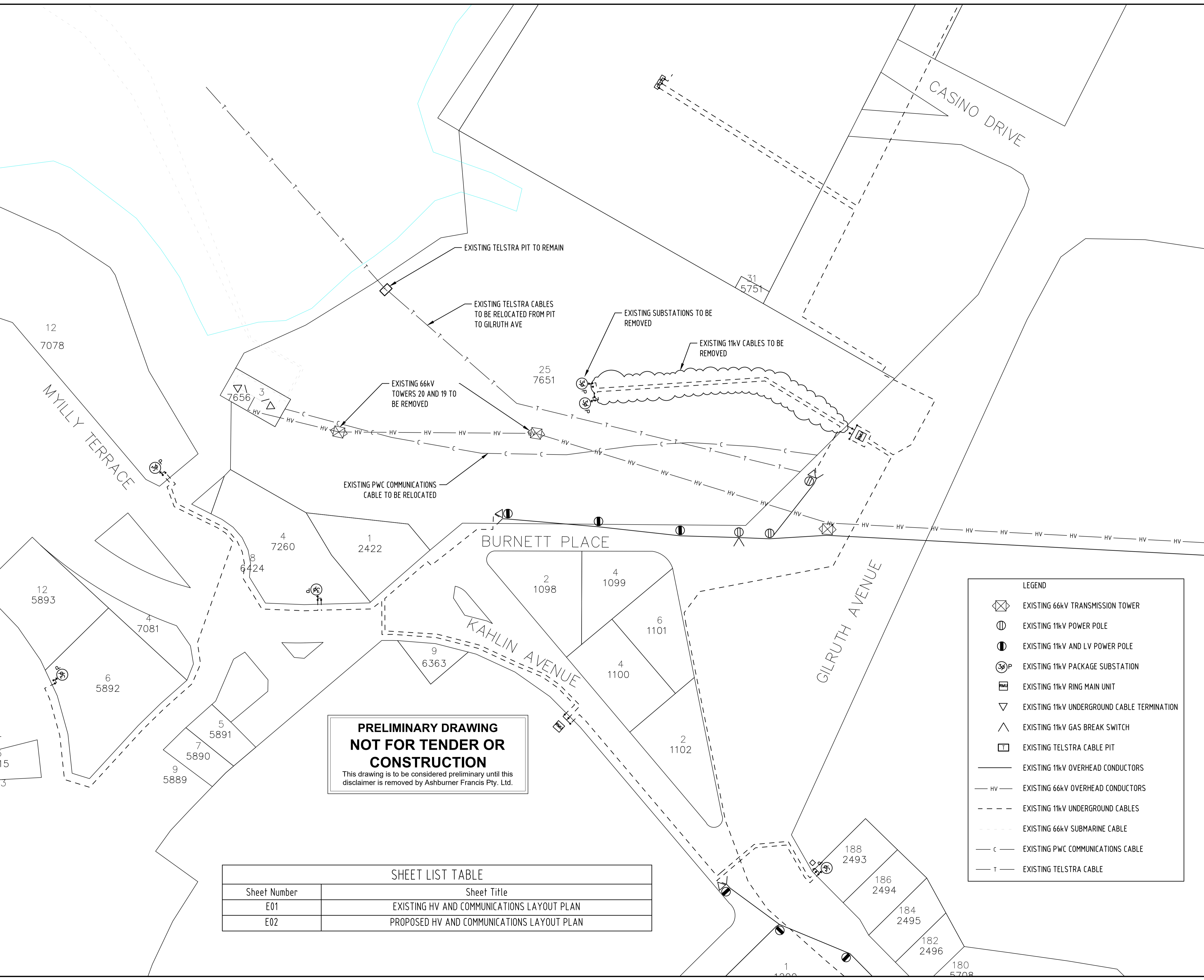
ELECTRICAL SERVICES

project
LOT 7651 TOWN OF DARWIN - EXISTING SERVICES INVESTIGATIONS

location
 25 GILRUTH AVENUE
 FANNIE BAY NT

title
EXISTING HV AND COMMUNICATIONS LAYOUT PLAN

date: MAR'20	scale: 1:1000	@A1
designed: CJ	drawn: CJ	checked:
CAD file name: 20-0154 E01.DWG		
20-0154	E01	A
job no.	sheet	issue



**PRELIMINARY DRAWING
 NOT FOR TENDER OR
 CONSTRUCTION**
 This drawing is to be considered preliminary until this disclaimer is removed by Ashburner Francis Pty. Ltd.

Sheet Number	Sheet Title
E01	EXISTING HV AND COMMUNICATIONS LAYOUT PLAN
E02	PROPOSED HV AND COMMUNICATIONS LAYOUT PLAN

PLOT DATE: 2020/03/23 V:\2020\0154 LITTLE MINDLE POWER LINE AND TELECOMMUNICATION RELOCATION\DWGSAFE_CURRENT\TELECOM\0154 E01.DWG

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A	23/03/20	PRELIMINARY ISSUE	CJ
issue	date	description	init.

client

KTT INVESTMENT PTY LTD
 457 HARRIS ST
 ULTIMO NSW 2007
 AUSTRALIA

Ashburner consulting engineers
Francis

ASHBURNER FRANCIS PTY LTD (A.B.N. 46 009 975 197)

DARWIN
 Suite C102, Wharf 1
 19 Kitchener Drive
 Darwin Waterfront NT 0800
 t: (08) 8942 0585
 e: darwin@ashburnerfrancis.com.au

BRISBANE
 TOWNSVILLE
 TOOWOOMBA
 PERTH
 CAIRNS

ELECTRICAL SERVICES

project
LOT 7651 TOWN OF DARWIN - EXISTING SERVICES INVESTIGATIONS

location
 25 GILRUTH AVENUE
 FANNIE BAY NT

title
PROPOSED HV AND COMMUNICATIONS LAYOUT PLAN

date: MAR'20 scale: 1:1000 @A1

designed: CJ

drawn: CJ

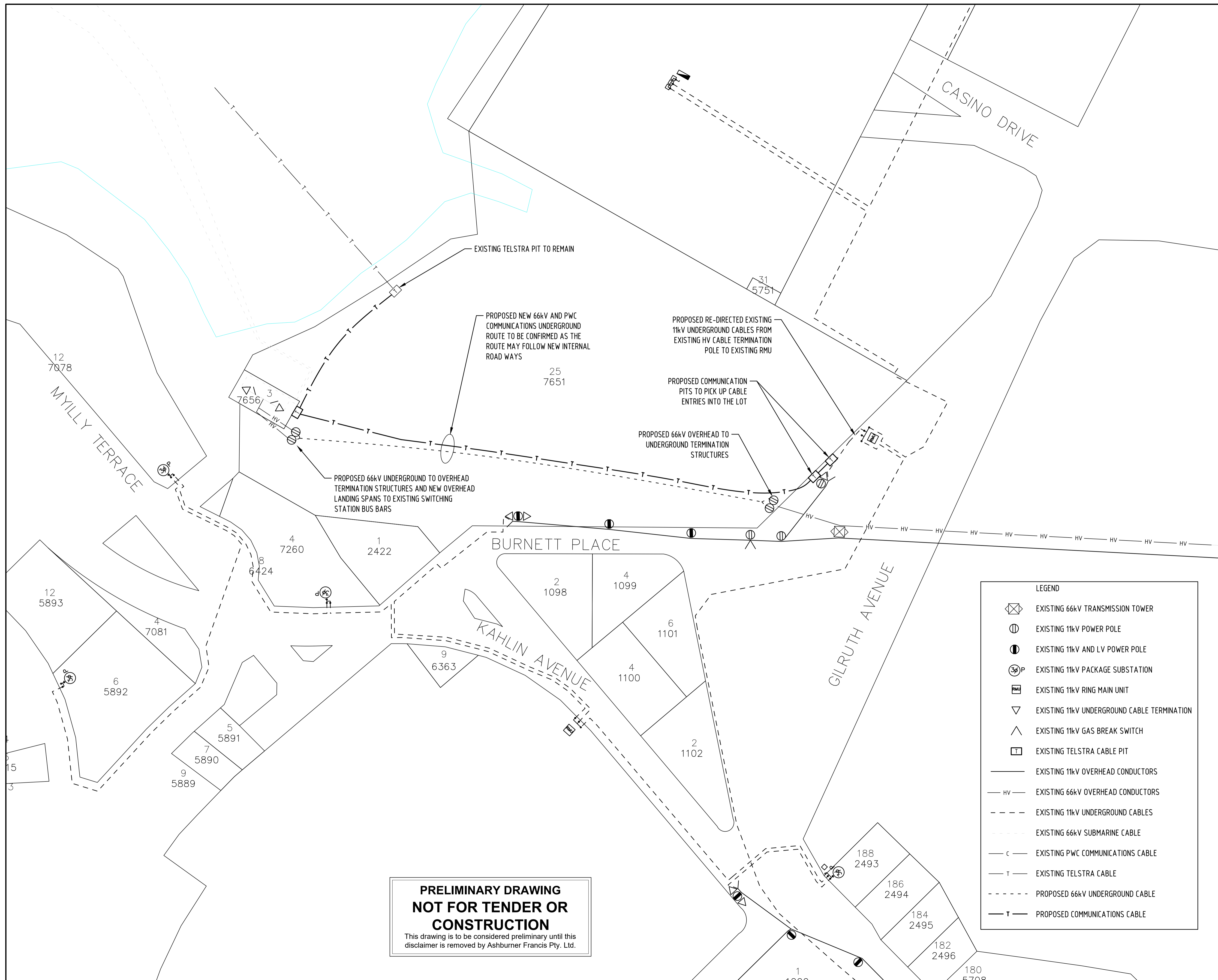
checked:

CAD file name: 20-0154 E02.DWG

north

20-0154 E02 A

job no. sheet issue



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 CONSTRUCTION**
 This drawing is to be considered preliminary until this disclaimer is removed by Ashburner Francis Pty. Ltd.

LEGEND	
	EXISTING 66kV TRANSMISSION TOWER
	EXISTING 11kV POWER POLE
	EXISTING 11kV AND LV POWER POLE
	EXISTING 11kV PACKAGE SUBSTATION
	EXISTING 11kV RING MAIN UNIT
	EXISTING 11kV UNDERGROUND CABLE TERMINATION
	EXISTING 11kV GAS BREAK SWITCH
	EXISTING TELSTRA CABLE PIT
	EXISTING 11kV OVERHEAD CONDUCTORS
	EXISTING 66kV OVERHEAD CONDUCTORS
	EXISTING 11kV UNDERGROUND CABLES
	EXISTING 66kV SUBMARINE CABLE
	EXISTING PWC COMMUNICATIONS CABLE
	EXISTING TELSTRA CABLE
	PROPOSED 66kV UNDERGROUND CABLE
	PROPOSED COMMUNICATIONS CABLE

PLOTDATE: 2020/03/23 V:\2020\0154 LITTLE MINDLE POWER LINE AND TELECOMMUNICATION RELOCATION\DWGSAFE_CURRENT\TELECOM\0154 E02.DWG

Appendix F
PWC Minutes



LITTLE MINDIL BEACH DEVELOPMENT – CONCEPT DEVELOPMENT

PROGRESS MEETING MINUTES - AMENDED

Job No. 23085

Date: 16/03/2020

Venue: Ben Hammond Complex – Water Section

Attendees: Harris Davidson (ADG), Claudio Jung (Ashburner Francis), Don Buentipo (PWC), Indumathi Appan (PWC), Anthony Greenwood (PWC), Thanh Tang (PWC), Michael Murtagh (PWC)

Apologies -

Item	Topic	Comments/Outcomes	Action
1		Point of Contact	
	› ADG	› Harris Davidson (h davidson@adgce.com)	
	› Ashburner Francis	› Claudio Jung (ClaudioJ@ashburnerfrancis.com.au)	
	› PWC	Water Services › Don Buentipo (Don.Buentipo@powerwater.com.au) • Cc: Indumathi Appan (Indumathi.Appan@powerwater.com.au) Electrical Services › Michael Murtagh (Michael.Murtagh@powerwater.com.au) › Anthony Greenwood (Anthony.Greenwood@powerwater.com.au) › Thanh Tang (Thanh.Tang@powerwater.com.au)	
2		Previous Meeting Minutes	
	› N/A		

3	Electrical Services – Relocation of Existing 66kV Overhead Transmission Conductor
	<ul style="list-style-type: none"> ➤ PWC advised that relocation of the existing overhead 66kV transmission conductor to underground 66kV cables would be acceptable provided the works are designed and constructed by consultants with relevant experience in transmission conductor operations. PWC provided a list of accredited consultants to this regard. ➤ ADG / Ashburner Francis proposed extent of relocation to underground should be limited to the allotment (i.e. termination 66kV structure and transition of overhead to underground to be located west of Gilruth Avenue, approx. 300m – 350m of relocation). PWC advised this proposed extent would be acceptable. ➤ PWC advised current 66kV tower adjacent to Gilruth Avenue would not be adequate for transition from 66kV overhead to 66kV underground and a new overhead 66kV termination structure to 66kV underground cable termination would be required. ➤ ADG / Ashburner Francis proposed alignment of underground transmission conductor to follow proposed internal roadway. PWC advised no objection to this suggestion. ➤ Electronic communications line identified within Lot 7651. PWC to confirm asset ownership and if this can be relocated within the same trench as the new 66kV transmission cables.
4	Electrical Services – Existing Underground HV Conductor
	<ul style="list-style-type: none"> ➤ Ashburner Francis advised existing 11kV underground HV cables and substations within Lot 7651 is currently used for events and can be decommissioned as part of this proposed development.
5	Water Services – Sewer Property Connection
	<ul style="list-style-type: none"> ➤ PWC advised the existing sewer pump station (SPS) located on Lot 5751 adjacent to the site currently has 450EP* of excess capacity. PWC advised a contribution would be required to allow connection to the existing SPS. *Amendment – PWC have confirmed in email correspondence dated 17/03/2020 the EP allocation for the site is <u>330EP</u>. ➤ ADG advised initial calculations identify approx. 405 EP for the development. ADG advised calculations are based on loose lot yield and would need to be firmed up. ➤ PWC to consider staging / upgrade of SPS (if required). Contribution costs to cover developer’s obligation to SPS upgrades. ➤ ADG to consider buffer zones and permitted use to existing SPS.
6	Water Services – Water Property Connection
	<ul style="list-style-type: none"> ➤ ADG to consider utilising existing DN150 PVC connection to site as property service to new development. ➤ PWC advised to ensure security of service, additional sluice valves may be required at the existing DN225 main (i.e. one on each side of the connection tee).

- › PWC Water Services to confirm contribution cost for connection to existing SPS on Lot 5751.
- › PWC Water Services to confirm buffer zone radius to SPS.
- › PWC Water Services to confirm permitted use for connection to SPS.
- › PWC Power Services to confirm ownership of electrical communication line in Lot 7651

Next milestone / meeting:

TBA on progression of site layout

Harris Davidson

From: Don Buentipo <Don.Buentipo@powerwater.com.au>
Sent: Thursday, 25 June 2020 1:39 PM
To: Harris Davidson
Cc: watersystems PWC
Subject: RE: Little Mindil Beach - Concept Development Meeting Minutes
Attachments: PDFS.zip; As Constructed drawing Little Mindil Sewer B09-15223.pdf; Lot 5751 Gillruth Avenue - PWC SPS (1).jpg

Hi Harris,

Refer to below response to ADG's queries from minutes sent on 17th March 2020.

- **PWC Water Services to confirm contribution cost for connection to existing SPS on Lot 5751.**

Upon further review, there is a bottleneck in rising main (DN100 main) in Lot 5772 Gilruth Ave. This will need to be upgraded to DN225 at developer's expense to facilitate proposed ultimate demand. If the development is staged, PWC can accept 150 EP before upgrade of SRM is required.

- **PWC Water Services to confirm buffer zone radius to SPS.**

Buffer zone is 30m

- **PWC Water Services to confirm permitted use for connection to SPS.**

There is an existing sewer service connection to the site via internal SPS and SRM, refer to attached drawings and photo of site. Any modifications required to existing connection is at developer's expense.

Thanks
Don

From: Harris Davidson <hdavidson@adgce.com>
Sent: Thursday, 28 May 2020 9:09 AM
To: Don Buentipo <Don.Buentipo@powerwater.com.au>
Subject: RE: Little Mindil Beach - Concept Development Meeting Minutes

Hi Don,

As discussed can you provide some advise in regard to the relevant items in Item 6 of the attached.

Cheers

Harris Davidson

Civil Engineer

ADG Engineers (Aust) Pty Ltd

T: 1300 657 402 **D:** 08 8944 6303

E: hdavidson@adgce.com

A: Tenancy 3, Level 1, 5 Edmunds Street Darwin NT 0800

P: GPO Box 2422 Darwin NT 0801

W: <https://www.adgce.com/>

Quality Assured Company to ISO-9001:2015.

Accredited to AS/NZS 4801:2001 Occupational Health and Safety Management Systems.

From: Harris Davidson
Sent: Tuesday, 17 March 2020 2:31 PM
To: 'Buentipo, Don' <Don.Buentipo@powerwater.com.au>; 'Appan, Indumathi' <Indumathi.Appan@powerwater.com.au>; 'Greenwood, Anthony' <Anthony.Greenwood@powerwater.com.au>; 'Tang, Thanh' <Thanh.Tang@powerwater.com.au>; 'Murtagh, Michael' <Michael.Murtagh@powerwater.com.au>
Cc: Brian Loughlin <bloughlin@adgce.com>; Dalton Glasby <dglasby@adgce.com>; 'Shener Dursun' <shener.dursun@mushan.com.au>
Subject: RE: Little Mindil Beach - Concept Development Meeting Minutes [Filed 17 Mar 2020 14:31]

Hi all,

Further to my email this morning, see attached amended meeting minutes incorporating comments made by PWC Water Services.

Regards

Harris Davidson

Civil Engineer

ADG Engineers (Aust) Pty Ltd

T: 1300 657 402 **D:** 08 8944 6303
E: [hdavidson@adgce.com](mailto:h davidson@adgce.com)
A: Tenancy 3, Level 1, 5 Edmunds Street Darwin NT 0800
P: GPO Box 2422 Darwin NT 0801
W: <https://www.adgce.com/>

Quality Assured Company to ISO-9001:2015.
Accredited to AS/NZS 4801:2001 Occupational Health and Safety Management Systems.

From: Harris Davidson
Sent: Tuesday, 17 March 2020 8:10 AM
To: Buentipo, Don <Don.Buentipo@powerwater.com.au>; Appan, Indumathi <Indumathi.Appan@powerwater.com.au>; Greenwood, Anthony <Anthony.Greenwood@powerwater.com.au>; Tang, Thanh <Thanh.Tang@powerwater.com.au>; Murtagh, Michael <Michael.Murtagh@powerwater.com.au>
Cc: Brian Loughlin <bloughlin@adgce.com>; Dalton Glasby <dglasby@adgce.com>; 'Shener Dursun' <shener.dursun@mushan.com.au>
Subject: Little Mindil Beach - Concept Development Meeting Minutes

Hi all,

Thanks for your time yesterday to discuss the proposed hotel development at Lot 7651 (Little Mindil Beach). Please find attached meeting minutes for your records.

Regards

Harris Davidson

Civil Engineer

ADG Engineers (Aust) Pty Ltd

T: 1300 657 402 **D:** 08 8944 6303
E: [hdavidson@adgce.com](mailto:h davidson@adgce.com)
A: Tenancy 3, Level 1, 5 Edmunds Street Darwin NT 0800
P: GPO Box 2422 Darwin NT 0801
W: <https://www.adgce.com/>

Quality Assured Company to ISO-9001:2015.

Accredited to AS/NZS 4801:2001 Occupational Health and Safety Management Systems.

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Appendix G Correspondence with NTG

Request from Harris Davidson about Storm Surge Level for the property Parcel – 7651, Town of Darwin, NT

The Surface Water group in DENR has carried out desktop study on storm surge level and flooding levels query for the property (**Parcel 7651, Town of Darwin, NT**) and have made the following comments based on available (published) relevant Mappings such as Storm Surge Flood Mappings and digital data as GIS layer:

SURFACE WATER COMMENTS:

- The lot of interest (**Parcel 7651** as shown in Figure 1 below) is affected by both Primary Storm Surge (PSS) and Secondary Storm Surge (SSS) inundation / flooding of 100 year and 1000 year ARI with approximate inundation levels as shown in Table 1 below (*Source: Darwin Area Storm Surge Inundation for 2100, November 2014 / prepared by GHD Pty Ltd for DLRM*).





Figure 1 Location of Primary and Secondary Storm Surge Levels (P – Primary; S – Secondary)

Table 1 Primary and Secondary Storm Surge Levels

Locations	Primary Storm Surge Level (PSS) (mAHD)	Secondary Storm Surge Level (SSS) (mAHD)
P1	5.46	-
P2	5.46	-
P3	5.47	-
P4	5.47	-
P5	5.47	-
P6	5.46	-
S1	-	5.75
S2	-	5.86
S3	-	5.85
S4	-	5.79
S5	-	5.75
S6	-	5.76

This document contains information obtained through a desktop assessment. DENR has made every reasonable effort to provide current and accurate information, but it does not make any guarantees regarding the accuracy or completeness of the information. The information in this document does not constitute professional advice and should not be relied upon. You should obtain your own professional advice.

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